

BRITISH ZOOLOGY.

PLATE 10.

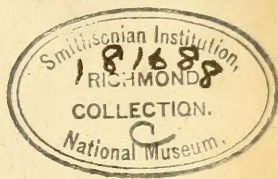
THE FISHES.



LONDON.

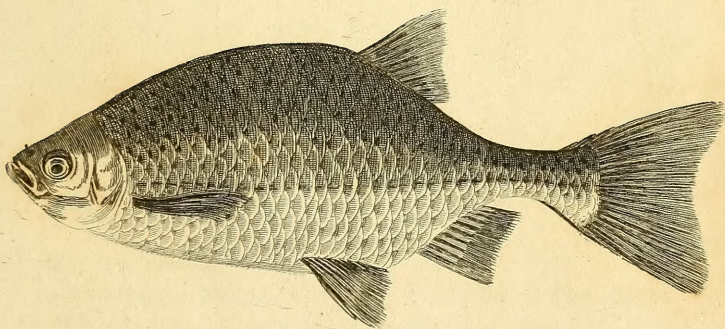
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BRITISH ZOOLOGY.



CLASS III. REPTILES

IV. FISHES



LONDON.

PRINTED for J. Walker, Wilkie and Robinson, I. Nunn, White, Cochrane & C^o Longman, Hurst, Rees, Orme and Brown, J. & A. Arch, R. Baldwin, Cadell & Davies, J. Harding, J. Richardson, J. Booth, J. Mawman, and J. Johnson & C^o

BRITISH ZOOLOGY,

BY

THOMAS PENNANT, Esq.

A NEW EDITION.

IN FOUR VOLUMES.

VOL. III.

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1 RICHARDSON, 1 MAYNARD, 1 AND A LACK,
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1812

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—
1812.

WILLIAM DOUGLASS

1796-1860

1818-1819

1820-1821

1822-1823

1824-1825

1826-1827

1828-1829

1830-1831

1832-1833

1834-1835

1836-1837

1838-1839

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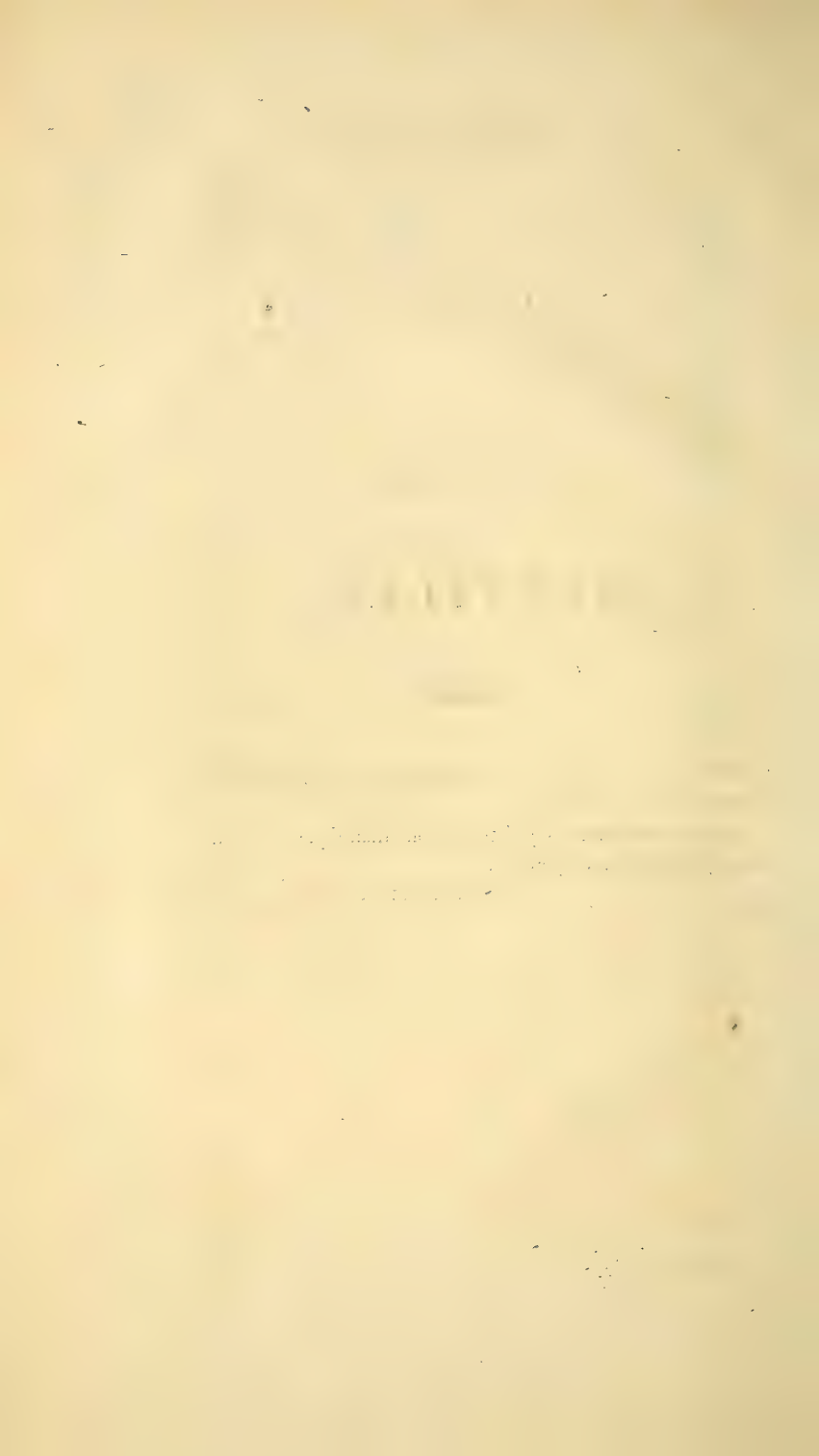
CLASS III.

REPTILES.

All the works of the LORD are good, and he will give every needful thing in due season.

So that a man cannot say, This is worse than that; for in time they shall all be well approved.

ECCLESIASTICUS xxxix. 33, 34.



REPTILES.

WE are now to consider the class of Reptiles, which are, for the most part, objects of detestation; but however the opinion of the world may be, if a writer undertakes a general history of animals, he must include them: they form at least one link in the chain of beings, and may therefore be viewed with a degree of pleasure by a philosophic eye.

Notwithstanding the prejudice against this class is almost universal, is it founded on reason? In some it may be owned that the outward form is disagreeable, while the noxious qualities of others are justly productive of terror: but are we on that account to reject them? The more fatal they are, the more deeply we should inquire into their effects, that we may be capable of relieving those who are sufferers, and secure others from the same misfortune.

But if we duly weigh their noxious qualities,
we shall, with our moral poet, find

“ All partial evil universal good.”

The teeth of wild beasts, and of serpents, are not only created as instruments of vengeance, but are salutary in lessening the numbers of those animals which are highly useful in the degree, and only hurtful in their excess; still if their bad qualities are serviceable, we are more indebted to their good ones than we chuse to acknowledge. Many also of the animals that form the class of Reptiles are of immediate benefit to mankind. The Turtle, or Sea-Tortoise, supplies the torrid zone with a wholesome and delicious food, as the epicures of our own country can attest. Frogs are a food in several parts, as Lizards and Serpents are in others. The medicinal virtues of the Viper are partly exploded by the moderns, but time, the overthrower of systems, as well as empires, may restore it to the rank it held with the antients. The *Lacerta Scincus* is, however, yet esteemed in the East for its salubrious qualities, and even Toads have contributed to the ease of patients in the most inveterate of all diseases.

Had I followed *Linnaeus*, and included the Cartilaginous Fishes in this class, there would

DSI

have been ample room for panegyric, for it is very doubtful whether any are pernicious ; the uses of many, either as food or for mechanical purposes, were never questioned.

But if the external figure of the reptile tribe is disgusting, they have one general beauty, an apt configuration of parts for their way of life, nor are they destitute of their peculiar graces : the fine disposition of plates in the shell of the Tortoise, with the elegant symmetry of the colors, must strike even common observers, while the eye of the despised Toad has a lustre denied to more pleasing forms. The frolicsome agility of Lizards enlivens the dried banks in hot climates ; and the great affection, which some of them shew to mankind, should farther engage our regard and attention. The wreathing of the snake, with the vivid dye of its skin, is certainly graceful, though, from the dread of some particular species which are venemous, we have acquired an antipathy for the whole. The antients, who considered the Serpent as an emblem of health, could associate pleasing ideas with this animal. We therefore find it an ornament at every entertainment, and in every scene of mirth, both in painting and in sculpture. *Virgil* adopted this notion, and has accordingly

described it with every beauty both of form and color :

*Adytis cum lubricus anguis ab imis
Septem ingens gyros, septena volumina, traxit ;
Amplexus placidè tumulum, lapsusque per aras :
Cæruleæ cui terga notæ, maculosus et auro
Squamam incendebat fulgor ; ceu nubibus arcus
Mille trahit varios adverso sole colores.*

Æn. Lib. V. 84.

From the deep tomb, with many a shining fold,
An azure serpent rose, in scales that flam'd with gold :
Like heaven's bright bow his varying beauties shone,
That draws a thousand colors from the sun :
Pleas'd round the altars and the tomb to wind,
His glittering length of volumes trails behind.

PITT.

But if after all some lively writer should pursue the Naturalist with more wit than argument, and more humor than good nature, it should be endured with patience. Ridicule is, however, not the test of truth, though, when joined to satire, it seldom fails of seducing the many who would rather laugh than think. Should this prove the case in the present instance, let the author be allowed to skreen himself from censure, by saying he writes not to the many, but the few ; to those alone who can examine the parts with a view to the *whole*, and who scorn to despise even the most deformed, or the most minute work of an all-wise CREATOR.

CLASS III.
REPTILES.



GENERA.

- I. TORTOISE.
- II. FROG.
- III. LIZARD.
- IV. SERPENT.



CORIACEOUS TORTOISE.



CLASS III.

REPTILES.

GENUS I. TORTOISE.

BODY, covered either with a shell or strong hide,
divided by sutures.

FEET, four fin-like.

TAIL, short.

Testudo coriacea sive *Mercurii*. *Rondel.* 450? *Gesner pisc.* 946?

Testudo coriacea. *T. pedibus pinniformibus muticis, testa coriacea, cauda angulis septem exaratis.* *Lin. syst.* 350.

Testudo testa coriacea, per longitudinem striata. *Gm. Lin.* 1036.

Le Luth. De la Cepede. Hist. 1. CORIACEOUS.
des Ovip. iii. tab. 3.

Shaw Gen. Zool. iii. 76.

Tuberculated Tortoise. *Pennant in Ph. Tr.* 1771. 272.
tab. 10. f. 4. (Young.)

Turtle. *Borlase Cornwall,*
285. *Plate 27.*

THIS species is common to the *Mediterranean*, and our southern seas, and is not, as far as we know, discovered in any other.

Two of a vast size were taken on the coast of *Cornwall*, in the mackrel nets, a little after

CORIACEOUS TORTOISE. CLASS III.

Midsummer, 1756: the largest weighed eight hundred pounds, the lesser nearly seven hundred. A third, of equal weight with the first, was caught on the coast of *Dorsetshire*, and deposited in the *Leverian Museum*. The late* bishop of *Carlisle* informed me, that a Tortoise was taken off the coast of *Scarborough*, in 1748, or 1749. It was purchased by a family then resident there, and several persons were invited to partake of it. A gentleman, who was one of the guests, told them it was a *Mediterranean* turtle, and not wholesome; only one of the company eat of it, who suffered severely, being seized with dreadful vomiting and purging.

DESCRIP-
TION.

The length of the body is four feet ten inches; of the head nine inches and a half; of the neck three; or of the whole five feet eleven inches. The upper jaw bifurcated at the end; the extremity of the lower sharp, clasping into the fork of the upper; the nostrils small and round. The breadth of the body in the largest part is three feet. The length of the fore fins two feet seven; of the hind thirteen inches and a half; they are smooth, grow pointed to the extremity, and are destitute of toes. These fins are stuffed;

* The right reverend *Charles Egerton*. Ed.

perhaps the bones might have been taken out, for in the figure given by *Rondeletius*, which agrees in all other respects with this species, there is an appearance of toes, and even nails. The body is covered with a strong hide, exactly resembling black leather, destitute of scales, but marked with the appearance of them. The back is divided into five longitudinal flutings or grooves, with as many sharp but smooth risings.

This species is said to be extremely fat; but the flesh coarse and bad, according to the report made by writers* who had an opportunity of tasting them in the *Mediterranean* sea. I am informed that the *Carthusians* will eat no other than this species.†

* *Rondeletius*. *Bossuet*.

† The inconvenience felt by the person who eats it, as mentioned in the preceding page, must therefore have been accidental. The *French* have given this species the name of *Le Luth*, from the supposition that its shell was particularly used by the antients in the construction of the lyre or harp, which was composed by attaching the strings or wires to the circumference of the shell.
ED.

GENUS II. FROG.

BODY, naked.

LEGS, four.

FEET, divided into toes.

TAIL, none.

- | | |
|--|-------------------------------------|
| 1. COMMON. Βατραχος. <i>Arist. Hist. an.</i> | Wasser Frosche. <i>Meyer an. I.</i> |
| <i>Lib. iv. c. 9.</i> | <i>Tab. 52.</i> |
| La Grenoille. <i>Belon poissons,</i> | <i>Rana temporaria. R. dorso</i> |
| 48. | <i>planiusculo subangulatø.</i> |
| <i>Rana fluviorum. Rondel. 217.</i> | <i>Lin. syst. 357. Gm. Lin.</i> |
| <i>Rana aquatica innoxia. Gesner</i> | <i>1053.</i> |
| <i>quad. ovip. 46. Aquatil. 805.</i> | <i>Groda, Fro, Klassa. Faun.</i> |
| <i>Rana aquatica. Raii Syn. quad.</i> | <i>Suec. No. 102.</i> |
| 447. | <i>Rana. Gronov. Zooph. No. 62.</i> |
| <i>Rana fusca terrestris. Ræsel.</i> | <i>La Rousse. De la Cepede.</i> |
| <i>Hist. ran. i. t. 1—8.</i> | <i>Hist. des Ovip. i. 528.</i> |

SO common and well-known an animal requires no description, but some of its properties are so singular, that we cannot pass them unnoticed.

Its spring or power of taking large leaps is remarkably great, and it is the best swimmer of all four-footed animals. Nature hath finely adapted its parts for those purposes, the fore members of the body being very lightly made, the hind legs and thighs very long, and furnished with very strong muscles.

While in a tadpole state, it is entirely a water animal; the work of fœcundation is performed in that element, as may be seen in every pond during spring; when the female remains oppressed by the male for a number of days. The work of propagation is extremely singular, it being certain that the frog has not a *penis intrans*. There appears a strong analogy in this case between a certain class of the vegetable kingdom and these animals; for it is well known, that when the female frog deposits its spawn, the male instantaneously impregnates it with what we may call a *farina fœcundans*, in the same manner as the male palm tree conveys fructification to the flowers of the female, which would otherwise be barren.*

GENERA-
TION.

As soon as the frogs are released from their tadpole state, they immediately retire to land; and if the weather has been hot, and there fall any refreshing showers, the ground for a considerable space becomes perfectly blackened by myriads of these animalcules, seeking for some secure lurking places. Some philosophers † not giving themselves time to examine into this phenomenon, imagined them to have been generated

* *Shaw's Travels*, 224. *Hasselquist Trav. Engl. Ed.* 416.

† *Rondeletius*, 216. *Wormii Mus.* 327.

in the clouds, and showered on the earth; but had they, like our *Derham*,* traced them to the next pool, they would have found a better solution of the difficulty.

As frogs adhere closely to the backs of their own species, so we know they will do the same by fish: *Walton*† mentions a strange story of their destroying pike; but that they will injure, if not entirely kill carp, is a fact indisputable, from the following relation. A very few years ago, on fishing a pond belonging to Mr. *Pitt*, of *Encomb*, *Dorsetshire*, great numbers of the carp were found, each with a frog mounted on it, the hind legs clinging to the back, the fore legs fixed in the corner of each eye of the fishes, which were thin and greatly wasted, teized by carrying so disagreeable a load. These frogs we imagine to have been males disappointed of a mate.

The croaking of frogs is well known, and from that in fenny countries they are distinguished by ludicrous titles, thus they are stiled *Dutch Nightingales* and *Boston Waites*; even the *Stygian* frogs have not escaped notice, for *Aristophanes* hath gone farther, and formed a chorus of them.

* *Ray's Wisdom Creat.* 316. † *Complete Angler*, 161.

Βρεκεκέξ, κοάξ, κοάξ,

Βρεκεκέξ, κοάξ, κοάξ,

Λιμναῖα κρηνῶν τέκνα. *

Brekekex, coax, coax,

Brekekex, coax, coax,

The offspring of the pools and fountains.

Yet there is a time of year when they become PERIODICAL
SILENCE. mute, neither croaking or opening their mouths for a whole month : this happens in the hot season, and that is in many places known to the country people by the name of the *Paddock Moon*. *Morton* † endeavours to find a reason for their silence, but tho' his facts are true, he is unfortunate in his philosophy. Frogs are certainly endued (as he well observed) with a power of living a certain time under water without respiration, which is owing to their lungs being composed of a series of bladders : but he mistakes the nature of air, when he affirms that they receive a quantity of cool air, and dare not open their mouths for a month, from a dread of admitting a warmer into their lungs. It is hardly necessary to say, that in whatever state the air was received, it would become vitiated in a certain time. We must leave the fact to be accounted for by farther experiments ; but from what we do know, we may partly vindicate *Theo-*

* *Comedy of the Frogs.* † *Hist. Northampt.* 441.

phrastus, and other antients, about the silence of the frogs at *Seriphus*. That philosopher affirms it, but ascribes it to the coldness of the waters in that island. Now when Monsieur *Tournefort* was there, the waters were lukewarm, and the frogs had recovered their voices.* Is it not probable that *Theophrastus* might be at *Seriphus* at that season when the frogs were mute, and having never observed it elsewhere, might conclude their silence to be general as to the time, but particular as to the place? *Ælian*,† who quotes *Theophrastus* for the last passage, ascribes the same silence to the frogs of the lake *Pierus* in *Thessaly*, and about *Cyrene* in *Africa*; but he is so uncertain a writer, that we cannot affirm whether the species of the *African* frogs is the same with ours.

FOOD. These, as well as other reptiles, only feed during a small space of the year. In a tadpole state they subsist chiefly on vegetables, but when they quit the water, their food is flies, insects, and snails. During winter frogs and toads remain in a torpid state; the last of which will dig into the earth, and cover themselves with almost the same agility as the mole.

* *Tournefort's voy.* I. 142. † *Ælian, Lib. III. ch. 35, 37.*

Rana gibbosa. <i>Gesner pisc.</i> 809.	Green Frog. <i>Shaw. Gen. Zool.</i> 2. EDIBLE.
Rana viridis aquatica. <i>Ræsel.</i>	iii. 103. <i>tab.</i> 31.
<i>Hist. ran.</i> 53. <i>t.</i> 13.	La Grenouille commune. <i>De</i>
Rana esculenta. R. corpore angulato, dorso transversè gibbo, abdomine marginato.	<i>la Cepede. Hist. des Ovip.</i> i. 503.
<i>Lin. syst.</i> 357. <i>Gm. Lin.</i> 1053.	Rana esculenta. <i>Laur. Amphib.</i> 31.

THIS differs from the former in having a high protuberance in the middle of the back, forming a very sharp angle. Its colors are also more vivid, and its marks more distinct; the ground color being a pale or yellowish green, marked with rows of black spots from the head to the rump.

DESCRIPTION.

This and, we think, the former, are eaten. We have seen in the markets at *Paris* whole hampers full, which the venders were preparing for the table, by skinning and cutting off the foreparts, the loins and legs only being kept. Our strong dislike to these reptiles, prevented a close examination into the species.

Great Frog. *Br. Zool.* iii. p.

3. GREAT.

INHABITS the woods near *Loch Ransa* in the *Isle of Arran*.

DESCRIP-
TION.

Is double the size of the common frog; the body square; the belly great; the legs short; has four toes on the fore-feet, four and a thumb to the hind; the second outmost toe the longest. The color above, is a dirty olive, marked with great warty spots; the head alone plain; the color beneath whitish. It leaps slowly.

4. TOAD.

Φεγγος. *Arist. Hist. an. lib. ix.*
c. I. 40.

Bufo. *Virg. Georg. I:* 184.

Rubeta. *Plin. lib. VIII. c.*
31.

Rubeta sc. Phrynum. *Gesner*
pisc. 807. *Rondel.* 222.

Bufo sive Rubeta. *Raii syn.*
quad. 252.

Bufo terrestris. *Ræsel. Hist.*
ran. 85. t. 20.

Bufo vulgaris. *Laur. Amphib.*
28.

Bufo rubetorum. *Klein quad.*
122.

Rana Bufo. R. corpore ventri-
coso verrucoso lurido fus-
coque. *Lin. syst.* 354. *Gm.*
Lin. 1047.

Padda, Tassa. *Faun. Suec.*
No. 275.

Gronov. Zooph. No. 64.

Le Crapaud commun. *De la*
Cepede. Hist. des Ovip. i.
568.

DESCRIP-
TION.

THE most deformed and hideous of all animals; the body broad, the back flat, and covered with a pimply dusky hide; the belly large, swagging, and swelling out; the legs short; its pace labored and crawling: its retreat gloomy and filthy: in short, its general appearance is such as to strike with disgust and horror; yet we have been told by those who have reso-

lution to view it with attention, that its eyes are fine: to this it seems that *Shakespeare* alludes, when he makes his *Juliet* remark,

Some say the lark and loathed toad change eyes.

As if they would have been better bestowed on so charming a songster than on this raucous reptile.

But the hideous appearance of the toad is such as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. *Ælian** makes its venom so potent, that basilisk-like, it conveyed death by its very look and breath; but *Juvenal* is content with making the *Roman* ladies, who were weary of their husbands, form a potion from its entrails, in order to get rid of the good man.

At nunc res agitur tenui pulmone rubetæ. *Sat.* VI. 558.

And again,

Occurrit Matrona potens, quæ molle Calenum
Porrectura viro miscet sitiente rubetam. *Sat.* I. 69.

To quench the husband's parching thirst, is brought
By the great Dame, a most deceitful draught;
In rich *Calenian* wine she does infuse,
(To ease his pains) the toad's envenom'd juice.

This opinion begat others of a more dreadful nature, for in after-times superstition gave it pre-

* *Hist. an. lib.* ix. c. 11. *ib. lib.* xvii. c. 12. and 15.

ternatural powers, and made it a principal ingredient in the incantations of nocturnal hags :

Toad that under the cold stone,
Days and nights has, thirty-one,
Swelter'd venom sleeping got,
Boil thou *first* i'th' charmed pot.

We know by the poet that this charm was intended for a design of the first consideration, that of raising the dead from their repose, and bringing before the eyes of *Macbeth* a hateful second-sight of the prosperity of *Banquo's* line.

This shews the mighty powers attributed to this animal by the dealers in the magic art ; but the powers our poet indues it with, are far superior to those that *Gesner* ascribes to it : *Shakespeare's* witches used it to disturb the dead ; *Gesner's*, only to still the living, *Ut vim coeundi, ni fallor, in viris tollerent.**

TOAD-STONE. We may add here another superstition in respect to this animal : it was believed by some old writers to have a stone in its head, fraught with great virtues medical and magical : it was distinguished by the name of the reptile, and called the *Toad-Stone*, *Bufonites*, *Crapaudine*, *Krottenstein* ; † but all its fancied powers vanished on the discovery of its being nothing but

* *Hist. quad. ovip.* 72.

† *Boet. de Boot. de Lap. et Gem.* 301. 303.

the fossil tooth of the sea-wolf, or of some flat-toothed fish, not unfrequent in our island, as well as several other countries; but we may well excuse this tale, since *Shakespeare* has extracted from it a simile of uncommon beauty:

Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

But these fables have been long exploded.

We shall now return to the notion of its being a poisonous animal, and deliver, as our opinion, that its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind parts, is the foundation of the report. That it has any noxious qualities we have been unable to bring proofs in the smallest degree satisfactory, though we have heard many strange relations on that point. On the contrary, we know several of our friends who have taken toads in their naked hands, and held them long without receiving the lest injury. It is also well known that quacks have NOT POISON-
OUS. eaten them, and have besides squeezed their juices into a glass, and drank them with impunity. We may say also, that these reptiles are a common food to many animals; to buzzards, owls, the thick-kneed bustard, ducks, and snakes,

who would not touch them were they in any degree noxious.

So far from having venomous, they have of late been considered to possess beneficent qualities. We wish, for the benefit of mankind, that we could make a favourable report of the many attempts recently made to cure the most terrible of diseases, the cancer, by the application of live toads; but, alas, they seem only to have rendered a horrible complaint more loathsome. My enquiries on this subject, and some further particulars relating to the history of this animal, may be found in the Appendix.*

In a word, we may consider the toad as an animal that has neither good or harm in it; that being a defenceless creature, nature has furnished it, instead of arms, with a most disgusting deformity, which strikes into almost every being, capable of annoying it, a strong repugnancy to meddle with so hideous and threatening an appearance.

GENERA-
TION.

The time of their propagation is very early in the spring: at that season the females are seen crawling about oppressed by the males,

* No. I.

who continue on them for some hours, and adhere so fast as to tear the very skin from the parts they stick to. They spawn like frogs;* but what is singular, the male affords the female obstetrical aid, in a manner that will be described in the Appendix.†

To conclude this account with the marvellous, this animal is said to have often been found in the midst of solid rocks, and even in the centre of growing trees, imprisoned in a small hollow, to which there was not the least adit or entrance:‡ how the animal breathed, or how it subsisted (supposing the possibility of its confinement) is past our comprehension. *Plot's*§ solution of this phænomenon is far from satisfactory; yet, as we have the great *Bacon's*|| authority for the fact, we do not entirely deny our assent to it.

* Except that the spawn of the frog is deposited in large jelly-like masses, while that of the toad is in double chains, resembling necklaces, of the length of three or four feet. ED.

† No. I. ‡ *Plot's Hist. Staff.* 247. § P. 249.

|| *Nat. Hist. Cent.* vi. *Exp.* 570.

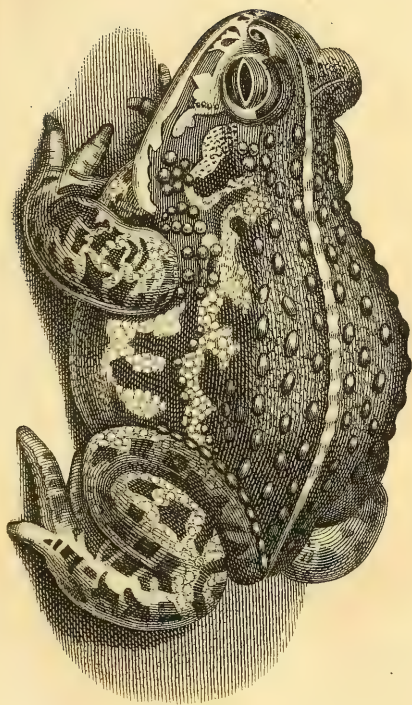
5. NATTER JACK. *Rana Rubeta?* *R. corpore verrucoso, ano obtuso subtus punctato.* *Lin. Syst.* 355. *Gm. Lin.* 1047. *Bufo calamita.* *Laur. Amphib.* 27. *Mephitic Toad.* *Shaw. Gen. Zool.* iii. 149. *tab.* 43. *Bufo terrestris foetidus.* *Ræsel. Hist. ran.* 107. *tab.* 24.

THIS species frequents dry and sandy places : it is found on *Putney Common*, and also near *Revesby Abby, Lincolnshire*, where it is called the *Natter Jack*. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is more like running. Several are found commonly together, and, like others of the genus, they appear in the evenings. Its deep and hollow voice is heard to a great distance.

DESCRIP-
TION.

The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples, of unequal sizes ; on the back is a yellow line ; the upper side of the body is of a paler hue, marked with black spots, which are rather rough ; on the fore feet are four divided toes ; on the hind five, a little webbed. The length of the body is two inches and a quarter ; the breadth, one and a quarter ; the length of the fore legs one inch one-sixth ; of the hind legs, two inches.

We are indebted to Sir *Joseph Banks, Bart.* for this account.



NATTER JACK TOAD.



BROWN LIZARD. (P. 29.)



SCALY LIZARD. (P. 25.)



GENUS III. LIZARD.

BODY slender naked.

LEGS four.

TOES divided on each foot.

TAIL very long.

- | | |
|---|--|
| Lacertus terrestris lutea squamosa anglica. <i>Raii Syn. quad.</i> 264. | Lacerta, <i>Gronov. Zooph.</i> No. 1. SCALY. 60. |
| <i>Plot's Hist. Staff.</i> 252. tab. 22. | Little Brown Lizard. <i>Edw.</i> 225. |
| Lacerta agilis. L. cauda verticillata longiuscula squamis acutis, collari subtus squamis constructo. <i>Lin. Syst.</i> 363. <i>Gm. Lin.</i> 1070. | Padzher pou. <i>Borlase Cornwall,</i> 284. tab. 28. |
| Odla, Fyrfot. <i>Faun. Suec.</i> No. 284. | Scaly Lizard. <i>Sheppard in Lin. Tr.</i> vii. 49. |
| Seps muralis. <i>Laur. Amphib.</i> 61. tab. 1. f. 4. | Green Lizard. var? <i>Shaw. Gen. Zool.</i> iii. 234. |
| | Le Lezard gris. <i>De la Cope. Hist. des Ovip.</i> i. 298. |

THOSE we have seen differ in color, but agree in all other respects with the species described by Doctor *Plot*. Their length from the nose to the hind-legs was three inches; from thence to the end of the tail three and three quarters. Along the back was a black list; on each side of that a brown one: then succeeded a narrow stripe, spotted alternately with yellow and

DESCRIP-
TION.

brown; beneath that a broad black one; those ended a little beyond the hind-legs. The belly was yellow, and the scales large but even; those on the back small; on the tail the ends projected, and were varied with black and brown. The legs and feet were dusky; on each foot were five toes, furnished with claws.

This species is extremely nimble: in hot weather it basks on the sides of dry banks, or of old trees; but on being observed immediately retreats to its hole. Its food, like that of all the other *English* lizards, is insects; itself, of birds of prey. Each of our lizards are perfectly harmless; yet their form is what strikes us with disgust, and has occasioned great obscurity in their history.

OTHER
SPECIES.

Related to this species is the *Guernsey* lizard, which we are informed has been propagated in *England* from some originally brought from that island. We have also heard of a green lizard frequent near *Farnham*, which probably may be of that kind: but the most uncommon species we ever met with any account of, is that which was killed near *Woscot*, in the parish of *Swinford*, *Worcestershire*, in 1741, which was two feet six inches long, and four inches in girth. The fore-legs were placed eight inches from the head; the hind-legs five inches beyond

those; the legs were two inches long: the feet divided into four toes, each furnished with a sharp claw. Another was killed at *Penbury*, in the same county. Whether these are not of exotic descent, and whether the breed continues, is what we are at present uninformed of.*

Lacertus terrestris anguiformis Viperine Lizard. *Sheppard in* 2. ANGUINE.
 in *erictijs. Raii Syn. quad.* *Lin. Tr. vii. 51.?*
 264.

WE remain in obscurity in respect to this species. It seems to be of that kind which connects the serpent and lizard genus, having a long and very slender body, and very small legs. Such are the *Seps*, or *Lacerta Chalcidica* of *Raii Syn. quad. 272*, the *Lacerta anguina* of *Linnaeus, 371*, or that figured by *Seba, tom. ii. tab. 68.* under the name of *Vermis serpentiformis*.

[Mr. *Sheppard*, in the seventh volume of the *Linnean Transactions*, thus describes the spe-

* Some additional information seems necessary with respect to the *Lacerta Œdura*, described by Mr. *Sheppard* in the seventh volume of the *Linnean Transactions*, p. 50. before it is admitted as a new species into the list of *British Lizards*. It is chiefly distinguished from the common Lizard by “the tail bulging out a little below the base, which gives it the appearance of having been cut off, and set on again; on all the feet are five toes with nails. Its length four inches and an half.” ED.

cies of Lizard supposed to have been mentioned by *Ray* in his *Synopsis*.

DESCRIP-
TION.

“ Head very light brown above, with four
“ dark spots, yellowish white beneath.

“ Back, with a black line along the middle,
“ reaching from the head to about half an inch
“ beyond the hind legs ; on each side of this is
“ a broader one of dark brown (these beyond
“ the black line unite, and reach to the end of
“ the tail) ; next to these succeeds a fine yellow
“ stripe that extends to the end of the tail ;
“ then a black one which reaches no farther
“ than the middle line, and afterwards a dark
“ brown stripe mixed with a few yellow spots
“ extending to the end of the tail. A little
“ above the hind legs, in some specimens, is a
“ slight division of the scales, forming a trans-
“ verse line. Belly yellowish white with a few
“ black spots. Tail, under part dirty white,
“ spotted with black as far as within an inch of
“ the end ; the remainder marked lengthways
“ with long bars of black. Legs dark brown,
“ spotted with black. Feet have all five toes
“ with nails. Length from seven to above
“ twelve inches.

“ Occasionally found near marshes, but its
“ general abode is upon heaths.” ED.

Lacertus parvus terrestris fuscus oppido rarus. Raii Syn. 3. LITTLE. quad. 264.

THIS species is mentioned by Mr. Ray in his list of the *English* lizards, without any other description than is comprehended in the synonym.

<i>Lacertus vulg. terrestris ventre nigro maculato. Raii Syn. quad. 264.</i>	dorso linea duplici fusca. 4. BROWN. <i>Lin. Syst. 370. Faun. Suec. No. 283. Gm. Lin. 1076.</i>
<i>L. vulgaris. L. cauda tereti mediocri, pedibus unguiculatis, palmis tetradactylis,</i>	<i>Sheppard in Lin. Tr. vii. 52. Common Newt. Shaw. Gen. Zool. iii. prt i. 295. t. 83.</i>

THIS is three inches long; the body slender; the tail long, slightly compressed, small and taper; that and the upper part of the body are of a pale brown, marked on each side the back with a narrow black line reaching to the end of the tail; the belly of a pale yellow, marked with small dusky spots; the fore feet divided into four toes; the hind into five; all without nails, and of a dusky color, spotted with yellow.

DESCRIP-
TION.

5. WARTY. *Lacertus aquaticus*. *Gesner quad. ovip.* 31. *Triton palustris*. *Laur. Amphib.* 39. t. 4. f. 2.
- Salamandra aquatica*. *Raii Sheppard in Lin. Tr.* vii. 52.
- Syn. quad.* 273. *Great Water Newt.* *Shaw.*
- Lacerta palustris*. *L. cauda lanceolata mediocri, pedibus muticis palmis tetradactylis.* *Gen. Zool.* iii. part I. 296.
- Lin. Syst.* 370. t. 83. *Nat. misc.* viii. 279.
- Lacerta palustris*. *L. fusca, cauda lanceolata mediocri, maris dorsum cristatum verno tempore, crista medio altiore.* *Gm. Lin.* 1065. *Faun. Skrot-abborre, Gruffgrabbe.*
- Succ.* 281. *Faun. Suec.* No. 281.
- Lacerta Americana.* *Seb. Mus.* i. tab. 89. fig. 4, 5.
- Salamandra alepidota verrucosa.* *Gronov. Zooph.* No. 47.
- La Salamandre a queue plate.* *De la Cope. Hist. des Ovip.* i. 471.

DESCRIP-
TION.

THE length of this species is six inches and an half, of which the tail is three and a quarter. The irides bright yellow; the head and beginning of the* back flat and covered with small pimples or warts, of a dark dusky color; the sides with white ones; the belly, and the side of the tail, are of a bright yellow; the first spotted with black. The tail is compressed sideways, very thin towards the upper edge, and slender towards the end. The feet formed like those of the preceding species. Its pace is slow and crawling.

This species we have frequently seen in the

* The male is furnished with a thin fin-like process which extends along the back. ED.

state we describe, but are uncertain whether we ever met with it under the form of a *larva*.^{*} We have more than once found under stones and old logs, some very minute young lizards that had much the appearance of this kind; they were perfectly formed, and had not the least vestiges of fins; so that circumstance, joined to their being found in a dry place, remote from water, makes us imagine them to have never been inhabitants of that element, as it is certain many of our lizards are in their first state. At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head, but both drop off as soon as the animal takes to the land, being then no longer of any use. Besides these circumstances that attend them in form of a *larva*, Mr. *Ellis*† has remarked certain pennated fins‡ at the gills of one very common in most of our stagnating waters, and which is frequently observed to take a bait like a fish.

* The water newt deposits in the spring two strings of eggs, connected by a viscous matter, in which also they are separately enveloped; in these the embryo is soon visible, and is hatched in about eight or ten days according to the warmth of the season. These animals very frequently cast their skins. The common newt or brown Lizard is said to be viviparous.

† *Phil. Trans.* vol. lvi. p. 191.

‡ These branchial processes are supposed to assist the respiration of the *larva* during its growing state, after which they are obliterated. ED.

6. LESSER WATER- NEWT.	<i>Lacerta aquatica</i> . L. olivaceo- fusca nigro maculata, sub- tus crocea cauda ancipiti la- teribus sinuata. <i>Shaw. Gen. Zool.</i> iii. Part I. 298. <i>Nat. Misc.</i> xi. pl. 412.	<i>Lacerta aquatica</i> . L. cauda teretiuscula mediocri. <i>Gm. Lin.</i> 1066. <i>Faun. Suec.</i> 282. <i>Triton cristatus</i> . <i>Laur. Amphib.</i> 39.
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[MR. *Pennant*, *de la Cèpede*, and other naturalists, have considered this species to be the same as the Warty Lizard, but we must subscribe to the distinctive character pointed out by Dr. *Shaw* in his general Zoology. We take the liberty of copying his accurate and interesting description of so curious an animal.

DESCRIP-
TION.

“ Its general length is about three inches and a half, and it very rarely exceeds that of four inches at most. The male is distinguishable at first sight from the female by its very conspicuous dorsal crest or process, which is broader in proportion, more strongly elevated, and more regularly sinuated, than that of the preceding species; the sinuations are continued to the very tip of the tail on the upper part, and take place likewise in a similar proportion on the under part as far as the junction of the tail with the abdomen; whereas, in the former species, the upper part of the tail alone can properly be said to be crested: this wide process or sinuated part is remarkably transparent, and when

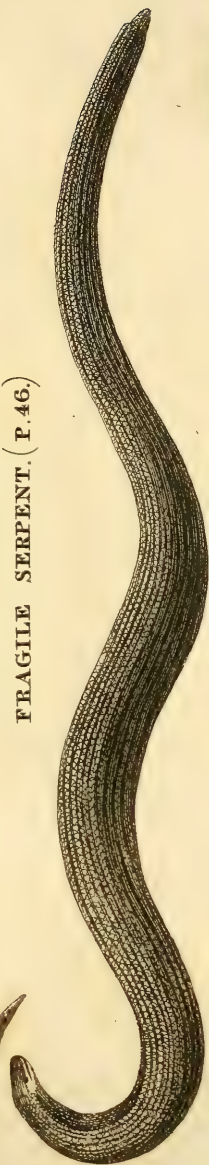
viewed with a lens of even moderately magnifying power, exhibits very distinctly the ramifications of the blood-vessels dispersed through it; but if examined by the microscope is perhaps of all other objects that can be selected for that purpose, the most eligible for exhibiting a general view of the circulation; shewing, in the most distinct and beautiful manner, the rapid current of the blood, the particles of which, in this animal, as well as in the rest of the *Amphibia*, are of an oval form, not round, as in the *Mammalia*. In the greater Water-Newt, on the contrary, this part being nearly opaque, can by no means advantageously exhibit the same phenomenon. The female is almost destitute of the dorsal crest, but the tail is furnished with an approach to it, though far less conspicuous than in the male. The general color of the male is olive brown beautifully and distinctly marked with numerous, round, black spots, dispersed over every part of the animal, but largest and most conspicuous on the sides and tail; the abdomen is orange-colored, the black spots often appearing less intense on that part than on the back. The female differs very considerably in color, being generally of a pale yellowish brown, much less distinctly spotted, and from the want of the

dorsal crest, might be almost mistaken for a different species by a person in conversant in the history of the animal. On the top of the head in both sexes are three or four longitudinal dusky streaks; the eyes are small and gold colored; the fore feet tetradactylous; the hind pentadactylous: all destitute of claws, and in some specimens more or less approaching to a kind of palmated appearance towards the base.”
ED.

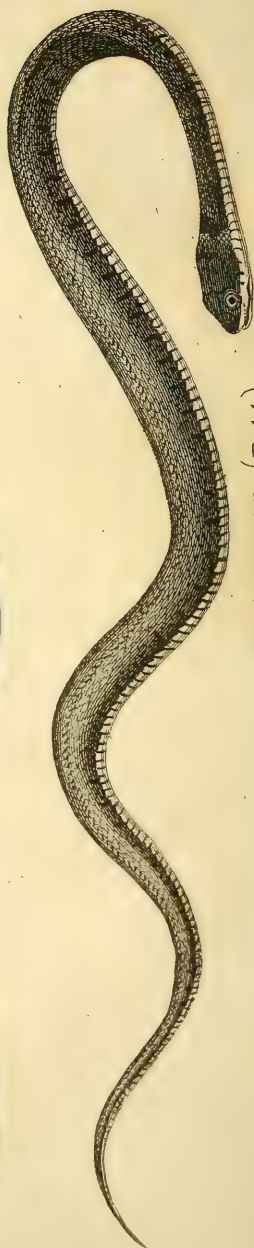
VIPER.



FRAGILE SERPENT. (P. 46.)



RINGED SERPENT. (P. 44.)



GENUS IV. SERPENT.

BODY long and slender, covered with scaly plates.

FEET none.

- | | |
|--|--|
| <i>Exis. Arist. Hist. an. lib. iii. c. 1.</i> | C. Berus scutis abdom. 146. 1. VIPER. squamis caudæ 39. |
| Vipera. <i>Virg. Georg. iii. 417. Plinii lib. x. c. 42.</i> | Hugg-orm. <i>Faun. Suec. No. 286.</i> |
| Vipera. <i>Gesner Serp. 71.</i> | <i>Laur. Amph. 97. tab. 2. fig. 1.</i> |
| Viper, or Adder. <i>Raii Syn. quad. 285. Borl. Corn. 282. tab. 28.</i> | La Vipere commune. <i>De la Cepede. Hist. des Serpents. ii. 1. tab. 1. fig. 1.</i> |
| Coluber Berus. <i>Lin. Syst. 377. Gm. Lin. 1090.</i> | <i>Amæn. Acad. i. 527. Shaw, Gen. Zool. iii. Part ii. p. 365.</i> |

VIPERS are found in many parts of this island, but the dry, stony, and, in particular, the chalky countries abound with them. They swarm in many of the *Hebrides*.

They are viviparous, not but that they are hatched from an internal egg; being of that class of animals, of whose generation *Aristotle** says, *Εν αυτοις μὲν ὥσπερ τὸ τέλειον ὄν, ἔξω δὲ ζωοτοκεῖ, i. e.* “They conceive a perfect egg within, but

* *De Gen. an. Lib. III. c. 2.*

bring forth their young alive.”* Providence is extremely kind in making this species far from being prolific, we having never heard of more than eleven eggs being found in one viper, and those are as if chained together, and each about the size of a blackbird’s egg.

DESCRIP-
TION.

The viper seldom grows to a greater length than two feet; though once we saw a female (which is nearly a third larger than the male) which was almost three feet long. The ground-color of this serpent is a dirty yellow; that of the female deeper; its back is marked the whole length with a series of rhomboid black spots, touching each other at the points; the sides with triangular ones; the belly entirely black.

There is a variety wholly black; but the rhomboid marks are very conspicuous even in this, being of a deeper and more glossy hue than the rest. *Petiver* calls it the *Vipera Anglica Nigricans*. *Pet. Mus.* No. 204.†

The head of the viper is inflated, which

* These are distinguished in modern systems by the character of Oviviparous. ED.

† *Coluber Prester. Lin. Syst.* 377. *Bosc. Faun. Suec.* No. 287. *La Vipere noire. De la Cope. Hist. des Serpents.* ii. 56.

Laurenti, in his *Synopsis Reptilium*, p. 98. coincides with *Linnaeus* in considering this as a distinct species. ED.



WARTY LINARD.



distinguishes it from the common snake; the tongue forked; the teeth small; the four canine teeth are placed two on each side the upper jaw: these instruments of poison are long, crookéd, and moveable, and can be raised and depressed at pleasure; they are hollow from near the point to their base, near which is a gland that secretes, prepares, and lodges the poison, and the same action that gives the wounds, forces from this gland, through the tooth, the fatal juice into it.

TEETH.

These islands may be particularly thankful for the blessing they enjoy, in being possessed of only one venomous animal, and that of a kind which increases so little. They copulate in *May*, and are supposed to be about three months before they bring forth. They are said not to arrive at their full growth in less than six or seven years; but to be capable of engendering at two or three.

We have been often assured by intelligent people of the truth of a fact mentioned by Sir *Thomas Brown*,* who was far from a credulous writer, that the young of the viper, when terrified, will run down the throat of a parent, and seek shelter in its belly in the same manner as

* *Vulgar errors*, 114.

the young of the opossum retire into the ventral pouch of the old one. From this some have imagined that the viper is so unnatural as to devour its own young; we disbelieve the fact, it being well known that the food of these serpents consists of frogs, toads, lizards, mice, and, according to Doctor *Mead*, even an animal as large as a mole. These they swallow entire; which, if we consider the narrowness of their neck, shews it is capable of a distension hardly credible, had we not ocular proofs of the fact. It is also said, from good authority, that they will prey on young birds; whether on such as nestle on the ground, or whether they ascend trees for them as the *Indian* serpents do, we are quite uncertain; but we are well assured that this discovery is far from a recent one:

*Ut assidens implumibus pullis avis
Serpentium allapsus timet.**

Thus, for its young the anxious bird
The gliding serpent fears.

The viper is capable of supporting very long abstinence, it being known that some have been kept in a box six months without food, yet did not abate of their vivacity. They feed only a small part of the year, but never during their

* *Hor. Epod. I.*

confinement, for if mice, their favourite diet, should at that time be thrown into their box, though they will kill, yet they never will eat them. The poison decreases in violence in proportion to the length of their confinement: it must be also added, the virtues of its flesh (whatsoever they be) are at the same time considerably lessened. These animals, when at liberty, remain torpid throughout the winter; yet, when confined, have never been observed to take their annual repose.

The method of catching vipers is by putting a cleft stick on or near their head; after which they are seiz'd by the tail, and put instantly into a bag. The viper-catchers are frequently bit by them in the pursuit of their business, yet we very rarely hear of the bite being fatal. The remedy, if applied in time, is very certain, and is nothing else but sallad oil, which the viper-catchers seldom go without. The *axungia viperina*, or the fat of vipers, is also another remedy. Doctor *Mead* suspects the efficacy of this last, and substitutes one of his own in its place;* but we had rather trust to vulgar receipts which perpetual trials have shewn to be infallible.

The symptoms of the venom, if the wound is

* *Essay on Poisons*, 47.

neglected, are very terrible: it soon causes an acute pain in the place affected, attended with a swelling, first red, afterwards livid, which by degrees spreads to the neighboring parts; great faintness, and a quick though low and interrupted pulse, ensue; sickness at the stomach, bilious convulsive vomitings, cold sweats, and sometimes pains about the navel, and in consequence of these, death itself. But the violence of the symptoms depends much on the season of the year, the difference of the climate, the size or rage of the animal, or the depth or situation of the wound.

USES.

Dreadful as the effects of its bite may be, yet its flesh has been long celebrated as a noble medicine. Doctor *Mead* cites from *Pliny*, *Galen*, and other antients, several proofs of its efficacy in the cure of ulcers, the *elephantiasis*, and other bad complaints. He even says he has seen good effects from it in an obstinate *lepra*: it is at present used as a restorative, though we think the modern physicians have no great dependence on its virtues. The antients prescribed it boiled, and to be eaten as fish; for when fresh, the medicine was much more likely to take effect than when dried, and given in form of a powder or troche. Mr. *Keysler* relates that Sir *Kenelm Digby* used to feed his

wife, who was a most beautiful woman, with capons fattened with the flesh of vipers.

The antient *Britons* had a strange superstition in respect to these animals, and of which there still remains in *Wales* a strong tradition. The account *Pliny* gives of it is as follows: we shall not attempt a translation, it being already done to our hands in a spirited manner by the ingenious Mr. *Mason*, which we shall take the liberty of borrowing.

*Præterea est ovorum genus in magna Galliarum fama, omissum Græcis. Angues innumeri æstate convoluti, salivæ faucium corporumque spumis artifice complexu glomerantur; anguinum appellatur. Druidæ sibilis id dicunt in sublime jactari, sagoque oportere intercipi, ne tellurem attingat: profugere raptorem equo: serpentes enim insequi, donec arceantur amnis alicujus interventu.**

But tell me yet
From the grot of charms and spells,
Where our matron sister dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-stone*,
Gender'd 'fore the autumnal moon?

* *Lib. XXIX. c. 3.*

When in undulating twine,
The foaming snakes prolific join ;
When they hiss, and when they bear
Their wondrous egg aloof in air ;
Thence before to earth it fall,
The *Druid* in his hallow'd pall
Receives the prize,
And instant flies,
Follow'd by the envenom'd brood,
'Till he cross the crystal flood.*

This wondrous egg seems to be nothing more than a bead of glass, used by the *Druids* as a charm to impose on the vulgar, whom they taught to believe, that the possessor would be fortunate in all his attempts, and that it would gain him the favor of the great.

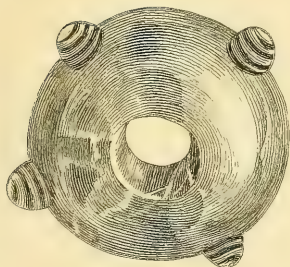
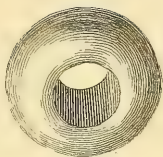
Our modern *Druidesses* give much the same account of the *ovum anguinum*, *Glain Neidr*, as the *Welsh* call it, or the *Adder-Gem*, as the *Roman* philosopher does, but seem not to have so exalted an opinion of its powers, using it only to assist children in cutting their teeth, or to cure the chin-cough, or to drive away an ague.

We have some of these beads in our cabinet : they are made of glass, and of a very rich blue color ; some are plain, others streaked : we say nothing of the figure, as the annexed plate will convey a stronger idea of it than words.

* *Mason's Caractacus.* The person speaking is a *Druid*.

Pl. VI.

P. 42.





This reminds me of another *Welsh* word that VERVAINE. is explanatory of the customs of the antients, shewing their intent in the use of the plant *Vervaine* in their lustrations ; and why it was called by *Dioscorides*, *Hierobotane*, or the sacred plant, and esteemed proper to be hung up in their rooms. The *British* name *Cas gan Cythrawl*, or the Devil's aversion, may be a modern appellation, but it is likewise called *Y Dderwen fendigaid*, the holy oak, which evidently refers to the *Druid* groves. *Pliny* informs us, that the *Gauls* used it in their incantations, as the *Romans* and *Greeks* did in their lustrations. *Terence*, in his *Andria*, shews us the *Verbena* was placed on altars before the doors of private houses in *Athens* ; and from a passage in *Pliny*,* we find the *Magi* were guilty of the most extravagant superstition about this herb. Strange it is that such a veneration should arise for a plant endued with no perceptible qualities ; and stranger still it should spread from the farthest north to the boundaries of *India*. So general a consent, however, proves that the custom arose before the different nations had lost all communication with each other.

* *Lib. XXV. cap. 9.*

2. RINGED. *Ευδρίς*. *Arist. Hist. an. i. c.* 1. *Coluber natrix. Lin. Syst.* 380. *Gm. Lin.* 1100.
- Natrix torquata. Gesner Serpent.* 63. *C. natrix scutis abdom.* 170. *squamis caudæ* 60.
- Natrix torquata. Raii Syn. quad.* 334. *Laur. Amph.* 75. *Tomt-Orm, Snok, Ring-Orm.*
- Anguis vulgaris fuscus collo flavescens, ventre albis maculis distinctus. Pet. Mus.* xvii. No. 101. *Faun. Suec.* No. 288. *La Couleuvre a collier. De la Cepadé. Hist. des Serpents.* ii. 147.

THE ringed or common snake is the largest of the *English* serpents, sometimes exceeding four feet in length: the neck is slender; the middle of the body thickest; the back and sides covered with small scales, the belly with oblong, narrow, transverse plates. The first *Linnaeus* distinguishes by the name of *squamæ*, the last he calls *scuta*, and from them forms his genera of serpents. Those that have both *squamæ* and *scuta* he calls *Colubri*; those that have only *squamæ*, *Angues*. The viper and snake are comprehended in the first genus, the blind-worm or Fragile serpent under the second; but we chuse (to avoid multiplying our genera) to unite the few serpents we have in a single genus, their marks being too evident to be confounded.

The color of the back and sides of the snake are dusky or brown; the middle of the back marked with two rows of small black spots running from head to tail; from them are multitudes of lines of spots crossing the sides; the plates on the belly are dusky, the scales on the sides of a bluish white; on each side the neck is a spot of pale yellow, and at the base of each is a triangular black spot, one angle of which points towards the tail; the teeth are small and serrated, lying on each side the jaw in two rows.*

DESCRIP-
TION.

This species is perfectly inoffensive; it frequents and lodges itself among bushes in moist places, and will readily take the water, swimming very well. It preys on frogs, insects,

* Mr. *Sheppard* mentions† a beautiful species or variety of *Coluber*, to which he gives the name of *cæruleus* from the elegant azure blue of its belly. It grows to the length of twenty-five inches. The upper part of the head is of a light brown color, with a dark brown spot in the form of a V; the sides of the under part yellowish white, edged with dull red; the irides red; the back light brown, and a string of dark brown rhomboidal marks reaching from the head to the end of the tail; the sides spotted with dark brown; the *scuta* of the belly light blue, spotted with white; the *squamæ*, which margin them, edged with white; the first part of the under side of the tail blue edged with red, the remainder yellow, spotted with white. ED.

† *Lin. Tr.* vii. 56.

worms, and mice, and considering the smallness of the neck, it is amazing how large an animal it will swallow. It is oviparous; lays its eggs in dunghills, and in hot-beds, whose heat, aided by that of the sun, promotes the exclusion of the young. During winter it lies torpid in banks of hedges, and under the roots of old trees.

- | | |
|---|---|
| 3. FRAGILE. The Blind-worm, or slow-worm, <i>Cæcilia Typhline</i> | <i>A. fragilis squamis abdominis</i> |
| Græcis. <i>Raii Syn. quad.</i> | <i>caudæque</i> 135. |
| 289. <i>Grew's Mus.</i> 48. | Ormsla, Kopparr-Orm. <i>Faun.</i> |
| <i>Cæcilia anglica cinerea squa-</i> | <i>Suec.</i> 289. |
| <i>mis parvis mollibus, com-</i> | Blind-worm. <i>Br. Zool.</i> 4to. |
| <i>pactis. Pet. Mus. xvii. No.</i> | iii. 33. |
| 102. | <i>Laur. Amph.</i> 68. <i>tab.</i> 5. <i>fig.</i> |
| Long Cripple. <i>Borlase Cornw.</i> | 2. |
| 284. <i>tab.</i> 28. | L'Orvet. <i>De la Cepede. Hist.</i> |
| <i>Anguis fragilis. Lin. Syst.</i> | <i>des Serpents.</i> ii. 430. <i>tab.</i> |
| 392. <i>Gm. Lin.</i> 1122. | 19. <i>fig.</i> 1. |

DESCRIP-
TION.

THE usual length of this species is eleven inches; the irides are red; the head small; the neck still more slender; from that part the body suddenly enlarges, and continues of an equal bulk to the tail, which ends quite blunt. The color of the back is cinereous, marked

with very small lines composed of minute black specks; the sides are of a reddish cast; the belly dusky, both marked like the back; the tongue is broad and forked; the teeth minute, but numerous; the scales small.

The motion of this serpent is slow, from which, and from the smallness of the eyes, are derived its names. It is quite innocent. Like others of the genus, they lie torpid during winter, and are sometimes found in vast numbers twisted together.

Doctor *Borlase* mentions a variety of this serpent with a pointed tail; and adds, that he was informed that a man lost his life by the bite of one in *Oxfordshire*. We are inclined to think that his informant mistook the black or dusky viper for this kind; for, excepting that species, we never could learn that there was any sort of poisonous serpent in these kingdoms.

In *Sweden* is a small reddish serpent, called there *Asping*, the *Coluber Chersea** of *Linnæus*,

* *Gm. Lin.* 1091. *Faun. Suec.* 285. *Laur. Amph.* 97. *Act. Stock.* 1749. p. 246. *tab. 6.* *Pennant's Arct. Zool. Int.* p. xc. *Ed.*

whose bite is said to be mortal. Is it possible that this could be the species which has hitherto escaped the notice of our naturalists? I the rather suspect it, as I have been informed, that there is a small snake that lurks in the low grounds of *Galloway*, which bites and often proves fatal to the inhabitants.

- | | | |
|-------------------|---|---|
| 4. ABER-
DEEN. | <i>Anguis Eryx. Lin. Syst. 392.</i>
<i>Gm. Lin. 1121.</i>
<i>A new Snake. Tour in Scotl.</i>
<i>1769. App.</i> | <i>L'Eryx. De la Cope. Hist.</i>
<i>des Serpents. ii. 438.</i> |
|-------------------|---|---|

DESCRIP-
TION.

ITS length is fifteen inches; the tongue broad and forked; the nostrils small, round, and placed near the tip of the nose; the eyes lodged in oblong fissures above the angle of the mouth; the belly of a bluish lead color, marked with small white spots irregularly disposed; the rest of the body of a greyish brown, with three longitudinal dusky lines, one extending from the head along the back to the point of the tail; the others broader, and extending the whole length of the sides. It had no *scuta*; but was en-

tirely covered with small scales ; largest on the upper part of the head.*

Inhabits *Aberdeenshire*. Communicated to me by the late Doctor *David Skene*. It is also found in *America*.

* The *Dumfriesshire* Snake of Mr. *Sowerby's British Miscellany*, tab. iii. is probably the young either of this or of the Ringed Serpent. Ed.

CLASS IV.

FISHES.

Oh Deus ! ampla tuæ quam sunt miracula dextræ !

O quam solerti singula mente regis !

Divite tu gazâ terras, et messibus imples ;

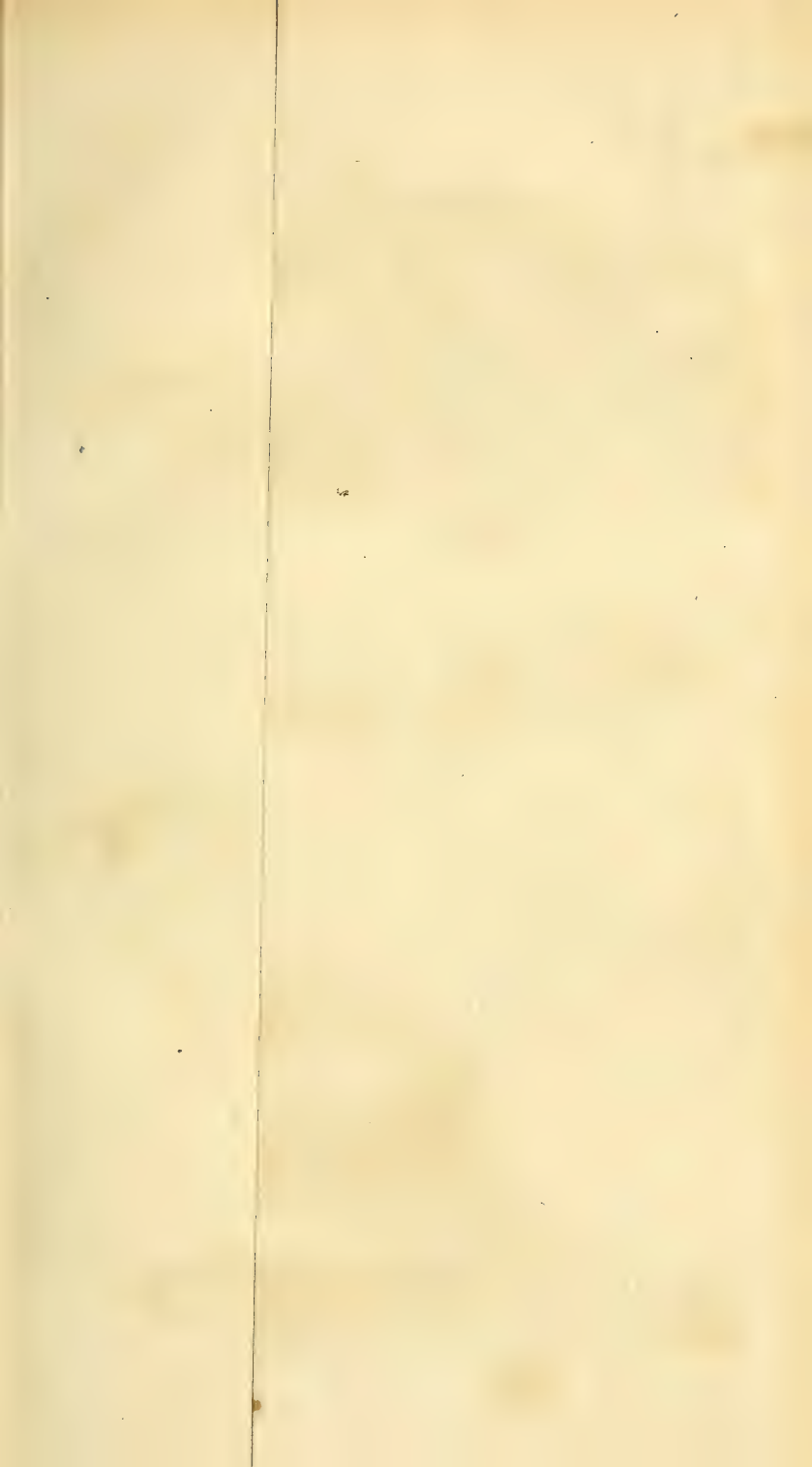
Nec minus est vasti fertilis unda maris :

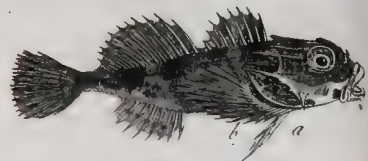
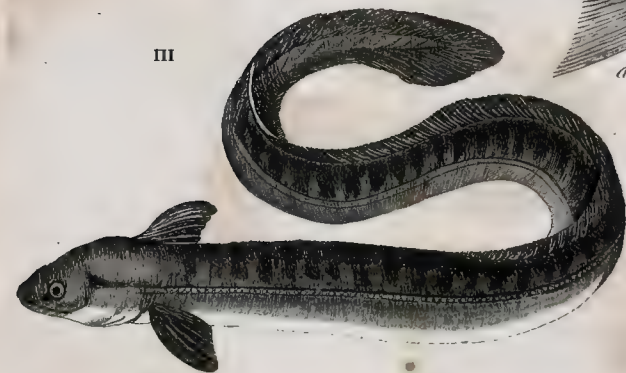
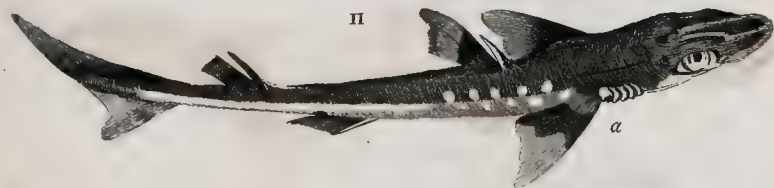
Squammiger hunc peragrat populus, prolesque parentum

Stipat, et ingentes turba minuta duces.

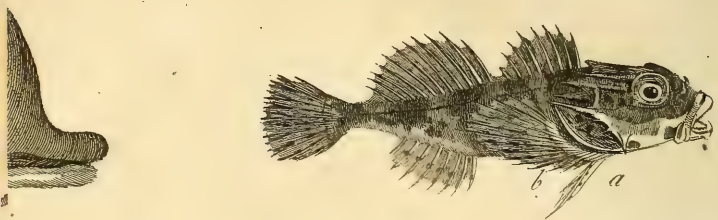
JONSTON. PSALMUS CIV.



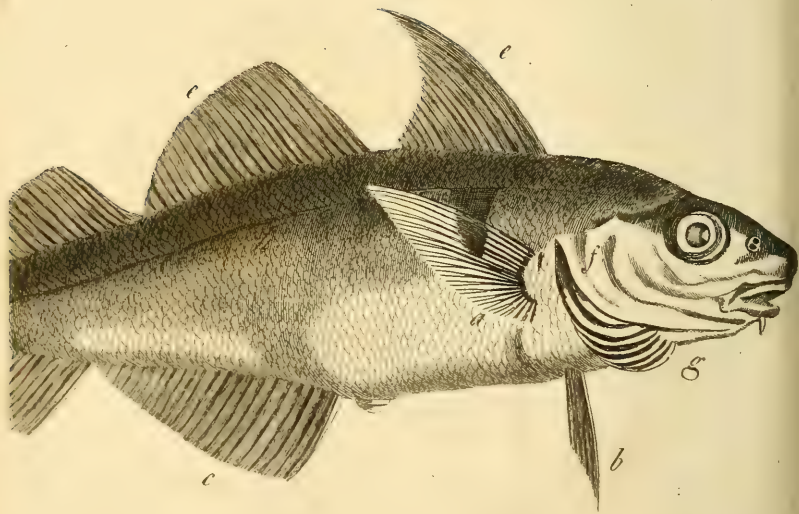




V



IV



VI.



FISHES.

DIV. I.

CETACEOUS FISHES.

NO gills; an orifice on the top of the head, through which they breathe, and eject water; a flat or horizontal tail; exemplified in the explanatory plate, *fig. 1.* by the BOTTLE-NOSE, borrowed from *Dale's Hist. Harwich. 411. Tab. 14.*

GENERA.

- I. WHALE.
- II. NARWHAL.
- III. CACHALOT.
- IV. HYPEROODON.
- V. DOLPHIN.

DIV. II. CARTILAGINOUS FISHES.

BREATHING through certain apertures, generally placed on each side of the neck, in some instances beneath, in some above, and from one to seven in number on each part, except in the Pipe Fish, which has only one.

The muscles supported by cartilages, instead of bones.

Explan. Pl. *fig.* 2. the PICKED SHARK.

a. The lateral apertures.

- VI. LAMPREY.
- VII. HAG.
- VIII. RAY.
- IX. SHARK.
- X. ANGLER.
- XI. STURGEON.
- XII. TETRODON.
- XIII. SUCKER.
- XIV. PIPE FISH.
- XV. TRUMPET FISH.

DIV. III. BONY FISHES.

THIS division includes those whose muscles are supported by bones or spines, which breathe through gills covered or guarded by thin bony plates, open on the side, and dilatable by means of a certain row of bones on their lower part, each separated by a thin web; which bones are called the *Radii Branchiostegi*, or the *Gillcovering Rays*.

The tails of all the fishes which form this division, are placed in a situation perpendicular to the body, and this is an invariable character.

Some Ichthyologists have lately attempted to make the number of the branchiostegous rays a character of the *genera*; but I found (yet too late in some instances, where I yielded an im-

plicit faith) that their rule was very fallible, and had induced me into error; but as I borrowed other definitions, it is to be hoped the explanation of the *genera* will be intelligible. I should be very disingenuous, if I did not own my obligations in this respect to the works of ARTEDI, Dr. GRONOVIVS, and LINNÆUS.

It is from the last I have copied the great sections of the BONY FISHES into

APODAL,	JUGULAR,
THORACIC,	ABDOMINAL.*

He founds this system on a comparison of the ventral fins to the feet of land animals or reptiles; and either from the want of them, or their particular situation in respect to the other fins, establishes his sections.

In order to render them perfectly intelligible, it is necessary to refer to those several organs of movement, and some other parts, in a perfect fish, or to one taken out of the three last sections.

The HADDOCK. Expl. Pl. *fig.* 4.

- a.* The pectoral fins.
- b.* ventral fins.
- c.* anal fins.
- d.* caudal fin, or the tail.

* *Vide Syst. Nat.* 422.

- e. e. e.* dorsal fins.
f. bony plates that cover the gills.
g. branchiostegous rays, and their membranes.
h. lateral, or side line.

SECT. I. APODAL.

THE most imperfect, wanting the ventral fins ; illustrated by the CONGER, *fig.* 3. This also expresses the union of the dorsal and anal fins with the tail, as is found in some few fishes.

- XVI. EEL.
 XVII. WOLF FISH.
 XVIII. LAUNCE.
 XIX. OPHIDIUM.
 XX. SCABBARD FISH.
 XXI. MORRIS.
 XXII. SWORD FISH.

SECT. II. JUGULAR.

THE ventral fins *b*, placed before the pectoral fins *a*, as in the HADDOCK, *fig.* 4.

- XXIII. DRAGONET.
 XXIV. WEEVER.
 XXV. CODFISH.
 XXVI. BLENNY.
 XXVII. TADPOLE FISH.

SECT. III. THORACIC.

THE ventral fins *a*, placed beneath the pectoral fins *b*, as in the FATHER LASHER, *fig. 5*.

- XXVIII. BAND FISH.
- XXIX. GOBY.
- XXX. BULL-HEAD.
- XXXI. DOREE.
- XXXII. FLOUNDER.
- XXXIII. GILT-HEAD.
- XXXIV. WRASSE.
- XXXV. PERCH.
- XXXVI. STICKLEBACK.
- XXXVII. MACKREL.
- XXXVIII. SURMULLET.
- XXXIX. GURNARD.

SECT. IV. ABDOMINAL.

THE ventral fins placed behind the pectoral fins, as in the MINOW, *fig. 6*.

- XL. LOCHE.
- XLI. SALMON.
- XLII. PIKE.
- XLIII. ARGENTINE.
- XLIV. ATHERINE.
- XLV. MULLET.
- XLVI. FLYING FISH.
- XLVII. HERRING.
- XLVIII. CARP.

DIV. I.

CETACEOUS FISHES.

NATURE on this tribe hath bestowed an internal structure in all respects agreeing with that of quadrupeds; and in a few the external parts in both are similar.

Cetaceous Fishes, like land animals, breathe by means of lungs, being destitute of gills. This obliges them to rise frequently to the surface of the water to respire; to sleep on the surface, as well as to perform several other functions.

They have the power of uttering sounds, such as bellowing and making other noises, a faculty denied to genuine fishes. *

Like land animals they have warm blood, are furnished with organs of generation, copulate, bring forth, and suckle their young, shewing a strong attachment to them.

Their bodies beneath the skin are entirely surrounded with a thick layer of fat (blubber) analogous to the lard on hogs.

The number of their fins never exceeds three,

* *Pontop. Hist. Norw.* II. 123. *Blasius Anat. Animal.* 288.

viz. two pectoral fins, and one back fin ; but in some species the last is wanting.

Their tails are placed horizontally or flat in respect to their bodies ; contrary to the direction of those of all other fishes, which have them in a perpendicular site. This situation of the tail enables them to force themselves suddenly to the surface of the water to breathe, which they are so frequently constrained to do.

Many of these circumstances induced *Linnaeus* to place this tribe among his *Mammalia*, or what other writers style quadrupeds.

To have preserved the chain of beings entire, he should in this case have made the genus of *Phocæ*, or Seals, and that of the *Trichecus* or *Manati*, immediately precede the whale, those being the links that connect the *Mammalia* or quadrupeds with the fishes ; for the Seal is, in respect to its legs, the most imperfect of the former class ; and in the *Manati* the hind feet coalesce, assuming the form of a broad horizontal tail.

Notwithstanding the many parts and properties which cetaceous fishes have in common with land animals, yet there still remain others, that in a natural arrangement of the animal kingdom, must determine us, after the example of the

illustrious *Ray*,* to place them in the rank of fishes; and for the same reasons, that first of systematic writers assigns.

The form of their bodies agrees with that of fishes.

They are entirely naked, or covered only with a smooth skin.

They live entirely in the water, and have all the actions of fishes.

* Who makes two divisions of fishes.

1. *Pulmone respirantes.*

2. *Branchiis respirantes.*

GENUS I. WHALE.

TEETH none, with horny laminæ in their mouths.

* Without a dorsal fin.

- | | |
|---------------------------------------|---|
| <i>Μυστήριος. Arist. hist. an.</i> | <i>berg. 130. Crantz's Greenl. 1. COMMON.</i> |
| <i>Lib. III. c. 12.</i> | <i>I. 107.</i> |
| <i>Musculus Plinii, Lib. XI. c.</i> | <i>La Baleine ordinaire. Brisson</i> |
| <i>37.</i> | <i>Cet. 218.</i> |
| <i>Balæna. Rondel. 475. Gesner</i> | <i>Balæna fistula in medio capite,</i> |
| <i>Pisc. 114.</i> | <i>dorso caudam versus acu-</i> |
| <i>Balæna major, laminas cor-</i> | <i>minato. Arted. Syn. 106.</i> |
| <i>neas in superiore maxilla</i> | <i>Sp. 106.</i> |
| <i>habens, fistula donata, bi-</i> | <i>Balæna mysticetus. Gm. Lin.</i> |
| <i>pinnis. Sib. Phalain. 28.</i> | <i>223. Gronlands Walfisk.</i> |
| <i>Balæna vulgaris edentula, dor-</i> | <i>Faun. Suec. No. 49.</i> |
| <i>so non pinnato. Raii Syn.</i> | <i>Balæna. Gronov. Zooph. 29.</i> |
| <i>pisc. 6.</i> | <i>Duhamel. Tr. des Pesches. iii.</i> |
| <i>Balæna. Rondel. 475. Wil.</i> | <i>sect. 10. 4. tab. 1.</i> |
| <i>Ich. 35.</i> | <i>La Baleine franche. De la Ce-</i> |
| <i>The Whale. Marten's Spitz-</i> | <i>pede. Hist. des Cet. Tab. 1.</i> |
| | <i>fig. 1.</i> |

THIS species is the largest of all animals. Whales are even at present sometimes found in the northern seas ninety feet in length; but formerly they were taken of a much greater size, when the captures were less frequent, and they had time to grow. Such is their bulk within the arctic circle, but in the torrid zone, where

they are unmolested, whales are still seen one hundred and sixty feet long.*

DESCRIP-
TION.

The head is very much disproportioned to the size of the body, being one-third of its length; the under lip is much broader than the upper; the tongue is composed of a soft spongy fat, capable of yielding five or six barrels of oil; the gullet is very small for so vast a fish, not exceeding four inches in width. In the middle of the head are two orifices, through which it spouts water to a vast height, and with a great noise, especially when disturbed or wounded. The eyes are no larger than those of an ox; on the back there is no fin, but on the sides, beneath each eye, are two large ones; the penis is eight feet in length, inclosed in a strong sheath; the teats in the female are placed in the lower part of the belly; the tail is broad and semilunar. This whale varies in color; the back of some being red, the belly generally white; others are black, some mottled,

* *Adanson's voy.* 174. From this account we find no reason to disbelieve the vast size of the *Indian* whales, of whose bones and jaws, both *Strabo*, *Lib.* XV. and *Pliny*, *Lib.* IX. c. 3. relate, that the natives made their houses, using the jaws for door-cases. This method of building was formerly practised by the inhabitants of *Greenland*, as we find from *Frobisher*, in his second voyage, p. 18, published in 1587.

and some quite white, according to the observation of *Marten*, who says, that their colors in the water are extremely beautiful, and that their skin is very smooth and slippery.

The substance called* whalebone adheres to ^{WHALEBONE.} the upper jaw, and is formed of thin parallel laminæ; some of the longest four yards in length; of these there are commonly 350 on each side, but in very old fish more; of these about 500 are of a length fit for use, the others being too short; they are surrounded with long strong hair, not only that they may not hurt the tongue, but as strainers to prevent the return of their food when they discharge the water out of their mouths.

It is from these hairs that *Aristotle* gave the name of *Μυστικήτος*, or the *bearded whale*, to this species, which he tells us had in its mouth hairs instead of teeth;† and *Pliny* describes the same under the name of *Musculus*.‡ Though the antients were acquainted with this animal, yet

* *Belon*, who published his work “*Sur la Nature des Poissons*,” in 1555, speaks of whalebone, “*dont les dames font aujourd’huy leurs bustes et arrondissent leurs verdugades*” by which it appears the *French* were acquainted with that article at lest forty years before we were.

† ἔτι δὲ καὶ ὁ μυστικήτος ὀδὼνλος μὲν ἐν τῷ στόματι ἔχει, τρίχας δὲ ὁμοίας ὑείας. *Hist. an. Lib. III. c. 12.*

‡ *Lib. XI. c. 37.*

as far as we recollect, they were ignorant of their uses as well as capture. *Aldrovand** indeed describes from *Oppian*, what he mistakes for whale fishing; but he was deceived by the word *κητος*, which is used not only to express whale in general, but any great fish. The poet here meant the shark, and shews the way of taking it, in the very manner practised at present, by a strong hook baited with flesh. He describes too its three-fold row of teeth, a circumstance that at once disproves its being a whale :

Δεινὰς χαυλίοδοντας ἀναίδεας ἥντ' ἄκοντας,
Τριστοιχεί πεφυωτάς ἐπασσυτέρησιν ἀκωκῆις.

Halieut. V. lin. 526.

Whose dreadful teeth in triple order stand,
Like spears out of his mouth.

The whale, though so bulky an animal, swims with vast swiftness, and generally against the wind.

It brings only two young at a time, as we believe is the case with all other whales.

Its food consists chiefly of the *medusa* or sea blubber, and other *Mollusca*.

The great resort of this species is within the arctic circle, but they sometimes visit our coasts. Whether this was the *British* whale of the an-

* *De Cetis. 261.*

tients we cannot pretend to say, only we find, from a line in *Juvenal*, that it was of a very large size ;

Quanto Delphinis Balæna Britannica major.

Sat. X.

As much as *British* whales in size surpass
The dolphin race.

To view these animals in a commercial light, we must add, that the *English* were late before they engaged in the whale-fishery : it appears by a set of queries, proposed by an honest merchant in the year 1575, in order to get information in the business, that we were at that time totally ignorant of it, being obliged to send to *Biskaie for men skilful in the catching of the whale, and ordering of the oil, and one cooper skilful to set up the staved cask.** This seems very strange ; for by the account *Octher* gave of his travels to king *Alfred*, near 700 years † before that period, it is evident that he made that monarch acquainted with the *Norwegians'* practising the whale-fishery ; but it seems all memory of that gainful employ, as well as of that able voyager *Octher*, and all his important discoveries in the North were lost for near seven centuries.

It was carried on by the *Biscainers* long

* *Hackluyt's Col. voy.* I. 414.

† *Idem*, I. 4.

before we attempted the trade, and that for the sake not only of the oil, but also of the whale-bone, which they seem to have long trafficked in. The earliest notice we find of that article in our trade is by *Hackluyt*,* who says it was brought from the *Bay of St. Laurence* by an *English* ship that went there for the *barbes* and *fynnes* of whales and train oil, A. D. 1594, and who found there seven or eight hundred *whale fynnes*, part of the cargo of two great *Biskaine* ships, that had been wrecked there three years before. Previous to that, the ladies' stays must have been made of split cane, or some tough wood, as Mr. *Anderson* observes in his Dictionary of Commerce,† it being certain that the whale fishery was carried on, for the sake of the oil, long before the discovery of the use of whale-bone.

The great resort of these animals was found to be on the inhospitable shores of *Spitzbergen*, and the *European* ships made that place their principal fishery, and for numbers of years were very successful: the *English* commenced that business about the year 1598, and the town of *Hull* had the honor of first attempting that profitable branch of trade. At present it seems to be on the decline, the quantity of fish being

* *Hackluyt's Col. voy.* III. 194. † *Vol.* I. 442.

greatly reduced by the constant capture for such a vast length of time: some recent accounts inform us, that the fishers, from a defect of whales, apply themselves to seal fishery, from which animals they extract an oil. This we fear will not be of any long continuance; for these shy and timid creatures will soon be induced to quit thoses hores by being perpetually harassed, as the *morse* or *walrus* has already in a great measure done. We are also told, that the poor natives of *Greenland* begin even now to suffer from the decrease of the seal in their seas, it being their principal subsistence; so that should it totally desert the coast, the whole nation would be in danger of perishing through want.

In old times the whale seems never to have ROYAL FISH. been taken on our coasts, but when it was accidentally flung ashore: it was then deemed a royal fish,* and the king and queen divided the spoil; the king asserting his right to the head, her majesty to the tail.†

* Item habet warectum maris per totum regnum *Ballenas* et *Sturgiones* captos, &c. *Edwardi II. anno 17mo.*

† *Blackstone's Com. I. c. 4.*

** With a dorsal fin or protuberance.†

- 2. FIN.** *Balæna edentula* corpore stric-
 tiore, dorso pinnato. *Raii* tubo pinniformi in extre-
syn. pisc. 9. mo dorso. *Arted. syn.* 107.
Dale Harwich, 410. No. 2. *Balæna Physalus.* *Gm. Lin.*
 224.
Fin Fish. Marten's Spitzberg. *Balæna Physalus.* β . fistula
 165. duplici in medio capite,
Egede Greenl. 65. *Crantz* dorso extremo pinna adi-
Greenl. I. 110. posa. *Faun. Groenl.* 35.
Balæna tripinnis, ventre lævi. *La Baleinoptere Gibbar.* *De*
Le Gibbar. *Brisson Cet.* *la Cepede. Hist. des Cet.*
 222. 114. tab. 1. fig. 2.
Balæna fistula in medio capite

THIS species is distinguished from the com-
 mon whale by a fin on the back, placed very
 low and near the tail.

**DESCRIP-
 TION.**

In length it is equal to that of the common
 kind, but much more slender. It is furnished
 with whalebone in the upper jaw, mixed with
 hairs, but short and knotty, and of little value.
 The blubber also on the body of this kind is very
 inconsiderable; these circumstances, added to
 its extreme fierceness and agility, which renders

† *De la Cepede* has formed a separate genus of this division,
 under the name of *Baleinoptere*, but as the characters of the
 Cetaceous tribe in the *British Zoology* are derived chiefly from
 the teeth, the editor has not thought proper to multiply the
 genera. **ED.**

the capture very dangerous, cause the fishers to neglect it: but the natives of *Greenland* hold it in great esteem, as it affords a quantity of flesh, which to their palate is very agreeable.

The lips are brown, and like a twisted rope: the spout hole is as it were split in the top of its head, through which it blows water with much more violence, and to a greater height, than the common whale. The fishers are not very fond of seeing it, for on its appearance the others retire out of those seas.

Some writers conjecture this species to have been the *Φυσάλος*, and *Physeter*, or the blowing whale of *Oppian*, *Ælian*, and *Pliny*;* but since those writers have not left the least description of it, it is impossible to judge which kind they meant; for in respect to the faculty of spouting out water, or blowing, it is not peculiar to any one species, but common to all the whale kind.

* *Oppian, Halieut. l. Lin. 368. Ælian Hist. an. ix. c. 49. Plin. lib. ix. c. 5.*

3. ROUND-LIPPED. *Balæna tripinnis* maxillam inferiorem rotundam et superiore multo latiore habens. *Sib. Phalain.* 78. tab. 3. *Raii syn. pisc.* 16. La Baleine a museau rond. *Brisson Cet.* 222. B. fistula duplici in fronte, maxilla inferiore multo latiore. *Arted. syn.* 107. La Baleinoptere Rorqual. *De la Cedepe. Hist. des Cet.* 126. tab. 1. fig. 3. *Ascan. icon. rer. nat. cah.* 3. tab. 26. *Balæna musculus.* *Gm. Lin.* 226.

THE character of this species is to have the lower lip broader than the upper, and of a semicircular form.

That taken in 1692 near *Abercorn-Castle*, was seventy-eight feet long, the circumference thirty-five; the *rictus* or gape very wide; the tongue fifteen feet and a half long; the mouth furnished with short whale-bone, about three feet in length; on the forehead were two spout holes of a pyramidal form; the eyes were placed thirteen feet from the end of the nose: the pectoral fins were ten feet long; the back fin about three feet high, placed near the tail, which was eighteen feet broad: the belly was full of folds.

This species feeds principally on herrings.

[The Round-lipped Whale is frequently seen in the *Orkneys* in the months of *July* and *August*, when the seas and sounds abound with herrings. Two were thrown ashore there some years ago, one in *Hoy* the other in *Flotay*; the

length of which was not less than fifty feet; the lips were very thick, and in the mouth, which was very large, was a quantity of excellent whalebone.* ED.

Balæna tripinnis nares habens cum rostro acuto, et plicis in ventre. *Sib. Phulain* 29. *tab.* 1.

Idem. *Raii Syn. pisc.* 16.

Pike-headed Whale. *Dale Harwich*, 410. No. 3.

La Baleine a museau pointu. *Brisson Cet.* 224.

Balæna fistula duplici in rostro, dorso extremo protube-

rantia cornuiformi. *Arted. Syn.* 107.

Balæna Boops. *Gm. Lin.* 225.

Balæna Boops. *B. fistula* duplici, dorso extremo protuberantia pinnæformi, capite recto obtuso, ventre sulcato. *Faun. Groenl.* 36.

La Baleinoptere museau-pointu. *De la Cèpede. Hist. des Cet. tab.* 4. *fig.* 2.†

4. PIKE-HEADED.

THE length of that taken on the coast of Scotland, as remarked by Sir Robert Sibbald, was forty-six feet, and its greatest circumference twenty.

SIZE.

The head was of an oblong form, sloping down, and growing narrower to the nose, six

DESCRIP-
TION.

* *Barry's Hist. of Orkney Islands*, 298. It has also occasionally wandered into the Mediterranean, &c.

† This figure, which seems to represent the Pike-headed Whale of the *British Zoology*, is essentially different from the subject given under the same name in *Tab.* 8. of the *Histoire des Cètaceès*, and which the editor conceives to be the *Balæna rostrata* of *Fabricius*. Whether the *Baleinoptere jubarte* of *De la Cèpede*, distinguished by a row of tubercles below the spout-holes, is a species distinct from the Pike-headed Whale, remains among the various uncertainties which attend the arrangement of the cetaceous tribe. ED.

feet eight inches from the end of which were two spout-holes, separated by a thin division; the eyes small. The pectoral fins five feet long, and one and a half broad; on the back, about eight feet and an half from the tail, in lieu of a back fin, was a hard horny protuberance; the tail was nine feet and a half broad; the belly was uneven, and formed into folds running lengthways; the skin extremely smooth and bright; that on the back black; that on the belly white.

This species takes its name from the shape of its nose, which *Dale* observes "is like that of the Pike fish."

[A whale, probably of this species, which was stranded in *October* 1808 on the banks of the *Forth* near the town of *Alloa*, has been particularly described by Mr. *Neill* in the *Memoirs* of the *Wernerian Society*, p. 201. Its length was forty-three feet; its greatest circumference twenty feet; the dorsal fin, or rather horny protuberance, was of a triangular shape, blunt in front, and sloping to a thin edge behind, its height thirty inches; it was placed about twelve feet from the extremity of the tail. The under jaw was fourteen feet in length, and rather longer and wider than the upper; in the latter were two rows of short horny *laminae* or whalebone, of a dark color, shading to a greenish white in the

thinner parts. The skin of the thorax and the fore part of the belly was plaited or folded ; the *sulci*, twenty-four in number, extended from the lower lip, to nearly four feet beyond the pectoral fins ; the tongue was black, large, soft, and smooth. In the color of the body and general character it corresponded with the specimen noticed by *Sibbald*. The ingenious secretary of the *Wernerian Society* has distinguished this by the name of the Fin Whale, but as this appellation has been given to a species with a smooth belly or devoid of fold, the editor has rather referred it to the Pike-headed Whale of the *British Zoology*. ED.

Balæna rostrata. B. rostro strictiore, dorso pinnato, la- minis oris albis. <i>Faun.</i> <i>Groenl.</i> 40.	tro longissimo et acutissimo. <i>Mull. Zool. Dan. prod.</i> 7. La Baleinoptere museau poin- tu. <i>De la Cepede Hist. des</i> <i>Cet.</i> 134. tab. 8. <i>Hunter in Ph. Trans.</i> 373. tab. 20, 21, 22.	5. SHARP- NOSED.*
Balæna rostrata. <i>Gm. Lin.</i> 226.		
Balæna (rostrata) minina, ros-		

[THIS is the smallest of the whale tribe, seldom exceeding the length of twenty-five feet. Its beak or the extremity of the mouth is singularly prolonged, the upper jaw shorter and narrower than the lower ; the pectoral fin is

DESCRIP-
TION.

* The editor has given this trivial name to prevent its being confounded with the Beaked Whale of the former edition of the *British Zoology*, and which he has, with some hesitation, referred to the new genus of *Hyperoodon*. ED.

placed at nearly equal distances between the belly and the ridge of the back; the dorsal fin is immediately over the line of the anus, triangular, notched, and rather bending towards the tail; the tongue is remarkably thick and fleshy; the under side of the throat, and the anterior part of the body, is plaited longitudinally, which gives the animal an opportunity of distending the skin, when the pouch or bladder, with which nature has furnished it, is inflated by the admission of air; the purpose of this pouch is not clearly understood, but it appears calculated to counteract the weight of the bones of the head, and to occasion the velocity of swimming for which it is remarkable. The folds of the plaited skin are red, as is a portion of the upper lip; the upper part of the body is a deep black, the lower white, agreeably clouded with darker shades; the pectoral fins are white in the middle, black at the extremity and base.

The specimen described by *Hunter* in the *Philosophical Transactions* was caught near the *Dogger Bank*; it is said not to be uncommon in the *British* channel. Its flesh is esteemed a delicacy by the *Greenlanders*, who pursue it with great zeal, but generally without effect from the extreme velocity with which it swims.
ED.

GENUS II. NARWHAL.

** With teeth.

TEETH: one, sometimes two, issuing out of the upper jaw, direct, straight, long, spiral.

SPIRACLE, on the head.

Monodon Monoceros. M.	ii. 18. t. 2.	1. UNICORN.
dente cornuformi spirali, rarius duplici, recto, prælongo, exserto in maxilla superiore. <i>Faun. Groenl.</i> 29.	<i>Faun. Suec.</i> 48.	
<i>Gm. Lin.</i> 222.	Le Narwal vulgaire. <i>Cepede Hist. des Cet.</i> 139. tab. 5. fig. 2.	
M. piscis e genere cetaceo. <i>Wil. ichth.</i> 42.	Small headed Narwal. <i>Fleming in Mem. Wern. Soc.</i> 131. tab. 6.	
<i>Raii Syn. pisc.</i> ii.	<i>Artedi. Gen.</i> 78. <i>Syn.</i> 108.	
Narwhal. <i>Klein. miss. pisc.</i>	<i>Arct. Zool.</i> ii. 349.	

[TWO instances only have occurred of the Narwhal having been observed on the coast of *Great Britain*. One was cast on the shore near *Boston* in *Lincolnshire*, in *February* 1800, and was exhibited in many parts of the kingdom. The length of its body was nearly seventeen feet, that of the tooth seven feet six inches; its girth was eight feet; the skin smooth and polished. A drawing of this specimen was

DESCRIPTION.

communicated by Sir *Joseph Banks* to *de la Cépède*, who describes it (unnecessarily) as a distinct species under the name of *le Narwal Microcephale*, and ignorant of *English* geography, has transferred the place of its discovery to *Boston in America*.

Another was found on the beach of the Sound of *Weesdale* in *Zetland* in *September* 1808, and has been accurately described by the reverend *John Fleming* in the *Memoirs* of the *Wernerian Society*. It measured only twelve feet from the snout to the notch which divides the tail; the external length of the tooth was twenty-seven inches, of the part inserted in the socket twelve inches; the head occupied a seventh part of the total length of the body; the forehead, on which was a mass of fat like a cushion, rose suddenly from the snout; on an elevated part above were placed the spiracles or *blow-holes*, which were separated in their passage through the skull, but united before they reached the external opening. The back swelled gradually to within a few inches beyond the pectoral fins; on the belly was a ridge which extended from the anus to the tail; on the back was a corresponding ridge and two on the sides, which gave the posterior part of the body a quadrangular appearance. The mouth was rather pointed, the

opening small; the upper lip longest. The eye was about an inch diameter, situated behind the opening of the mouth, and nearly under the spiracle; the pupil black, the irides chesnut. The pectoral fins, or the organs which serve the purpose, were small in proportion to the size of the animal, measuring only fifteen inches in length, and six inches in the broadest part. The tail, as in all the cetaceous tribe, was placed horizontally, and had a slight indentation; the lobes were equal, and the distance between their extreme parts was thirty-two inches. The color of the upper part of the body was a dusky black, variegated with obscure darker spots; on the sides were numerous longitudinal spots; the belly was white. The outer skin was thin, pellucid, and easily separated; the true skin was nearly a quarter of an inch thick, and closely united with the layer of fat which enveloped the whole body.

The subject here described had neither attained its size or due proportions, as the Narwhal grows to the length of more than twenty feet and its tooth to that of ten. This generally issues out of the left side of the nose, while a small one is concealed under the muscles on the right; but there are instances of both teeth growing to the same length.

The Narwhal inhabits the northern seas from *Norway* to within the *Arctic* circle, is plentiful in *Davis's Straits* and the north of *Greenland*, where the natives for want of wood make rafters of its teeth. These, in old times, were imposed upon the world as the horns of the unicorn, and sold at a high price. There is a magnificent throne made of this species of ivory for the Danish monarchs, which is still preserved in the castle at *Rosenberg*. ED.

BLUNT HEADED CACHALOT.



GENUS III. CACHALOT.

TEETH in the lower jaw only.

Trumpa. <i>Purchass's Pilgrimes</i> iii. 471.	<i>Cepede. Hist. des Cet.</i> 212. <i>tab.</i> 10. <i>f.</i> 2. ?	1. BLUNT- HEADED.
Balæna major in inferiore tan- tum maxilla dentata denti- bus arcuatis falciformibus, pinnam sive spinam in dorso habens. <i>Sib. Phalain.</i> 13. <i>tab.</i> A. 1.	The Parmacitty Whale, or Pot Wal Fish. <i>Dale Har- wich,</i> 413.	
<i>Raii Syn. pisc.</i> 15.	<i>Physeter microps. Arted. Syn.</i> 104.	
Le cachalot a dents en fau- cilles. <i>Brisson Cet.</i> 229.	<i>Physeter macrocephalus. (y)</i> <i>Gm. Lin.</i> 227.	
Le Cachalot Trompo. <i>De la</i>	<i>Cashalot, Catodon, or Pot</i> <i>Fish. Crantz Greenl. i.</i> 112.	

A FISH of this kind was* cast ashore on *Cramond Isle*, near *Edinburgh*, *December* 22d, 1769; its length was fifty-four feet, the greatest circumference, which was just beyond the eyes, thirty; the upper jaw was five feet longer than the lower, whose length was ten feet.

The head was of a most enormous size, very thick, and above one-third the size of the fish; the end of the upper jaw was quite blunt, and

DESCRIP-
TION.

* Mr. Barry informs us that this species is not unfrequently thrown on the shores of the *Orkney* isles. Ed.

BLUNT-HEADED CACHALOT. CLASS IV.

nearly nine feet high; the spout-hole was placed near the end of it. The teeth were placed in the lower jaw, twenty-three on each side, all pointing outwards; in the upper jaw, opposite to them, were an equal number of cavities, in which the ends of the teeth lodged when the mouth was closed. The tooth, figured in *Plate iii. fig. 2.* is eight inches long, the greatest circumference the same; it is hollow within side for the depth of three inches, and the mouth of the cavity very wide; thickest at the bottom, and grows very small at the point, bending very much; in some the flexure is more than in others. These, as well as the teeth of all other whales we have observed, are very hard, and cut like ivory. The eyes are very small, and remote from the nose; the pectoral fins were placed near the corners of the mouth, and only three feet long; it had no other fin, only a large* protuberance on the middle of the back; the tail a little forked, and fourteen feet from tip to tip. The penis seven feet and a half long.

* This circumstance gives us reason to suppose that the species here described was the third variety (γ) of the *Physeter macrocephalus* of Gmelin and *Le Cachalot Trumpo* of de la Cépède, p. 212; *le Cachalot macrocephale* of the latter author, being provided with the rudiment and appearance of a true dorsal fin. ED.

The figure,* we borrowed from a print in the sixtieth volume of the *Philosophical Transactions*, p. 321, where there is a very good account of this species by Mr. *James Robertson*, surgeon.

This is one of the species which yield what is improperly called *sperma ceti*; that substance SPERMACETI. being found lodged in the head and other parts of the fish that form this genus, which the *French* call *Cachalot*, a name we have adopted, having no general term for it in our tongue.†

Linnaeus informs us, that it pursues and terrifies the *Porpoisses* to such a degree as often to drive them on shore.

* *Plate ii.*

† It also produces the noted perfume called *Ambergris*, which is found in masses of various sizes in the intestines, and appears to be indurated *feces*, the result of some peculiar disease. ED.

2. ROUND- HEADED.	Balæna minor in inferiore	Le Cachalot Svineval. <i>De la</i>
	maxilla tantum dentata sine	<i>Cepede Hist. des Cet.</i> 216.
	spina aut pinna in dorso.	Physeter Catodon. <i>Gm. Lin.</i>
	<i>Sib. Phalain.</i> 9.	226.
	<i>Raii Syn. pisc.</i> 15.	Catodon fistula in rostro. <i>Ar-</i>
	Le petit Cachalot. <i>Brisson</i>	<i>ted. synonym.</i> 108.
	<i>Cet.</i> 228.	

THIS species was taken on one of the *Orkney* isles, a hundred and two of different sizes being cast ashore at one time, the largest measuring twenty-four feet in length.

DESCRIP-
TION.

The head was round, the opening of the mouth small: *Sibbald* says it had no spout hole, but only nostrils. We rather think, that the former being placed at the extremity of the nose was mistaken by him for the latter. The teeth we have in our cabinet of this species* are an inch and three quarters long, and in the largest part, of the thickness of a man's thumb; the top is quite flat, and marked with concentric lines; the bottom is more slender than the top, and pierced with a small orifice. The back fin was wanting; instead of it was a rough space.

* *Plate iii. fig. 4.*

Balæna macrocephala tripin- nis, quæ in mandibula infe- riore dentes habet minus in- flexos et in planum desi- nentes. <i>Sib. Phalain.</i> 18.	Physeter Tursio. <i>Gm. Lin.</i> 229.?	3. HIGH- FINNED.
<i>Raii Syn. pisc.</i> 16.	Le Cachalot a dents plattes. <i>Brisson Cet.</i> 230.	
	Le Physetere* <i>Mular. De la</i> <i>Cepede. Hist. des Cet.</i> 239.	

ONE of this species was cast on the *Orkney* isles in 1687. The spout-hole was placed in front, and on the middle of the back was a high fin, which *Sibbald* compares to the mizen mast of a ship. The head abounded with *sperma ceti* of the best sort. The teeth of this kind are very slightly bent; that which we have figured † is seven inches three-quarters in length; the greatest circumference nine: it is much compressed on the sides; the point rather blunt than flat; the bottom thin, having a very narrow but long orifice, or slit, hollowed to the depth of five inches and a quarter, and the tooth immersed in the jaw as far as that hollow.

DESCRIP-
TION.

* *De la Cepede* has placed this species in a distinct genus, in consequence of its having a dorsal fin, with which the Cachalot is not provided. *ED.*

† *Plate iii. fig. 1.*

4. TWO-TOOTHED. *Physeter bidens. Sowerby Br. Cepede. Hist. des Cet. 309.*
 Misc. tab. 1. Hunter in Ph. Trans. 1787.
 *Le Dauphin Diodon. De la 373. tab. 19.**

DESCRIP-
TION.

[THIS species seems to unite the Cachalot with the Dolphin genus; the general form of the body strongly resembles the characteristic appearance of the latter. The snout is flattened and prolonged like that of the common Dolphin. The teeth placed near the extremity of the lower jaw are pointed; the forehead is convex; the greatest circumference of the body is near the pectoral fins, which are small and oval; the dorsal fin is situated near the tail, and is rather pointed and bent backwards. The general color is a blackish brown, growing lighter towards the belly. The specimen described by the late *John Hunter* did not exceed eleven feet, and that figured by *Sowerby*, which was caught on the coast of *Scotland*, did not measure more than sixteen feet; but it probably grows to a much greater size. ED.

* Our illustrious naturalist refers this to the Bottle-head of *Dale*. The greatest uncertainty still attends the arrangement of the cetaceous tribe, and is likely to continue, from the difficulty of examining these monsters of the deep, and from the avidity with which they are mutilated, for the sake of their blubber, when they are accidentally thrown on our shores. ED.

GENUS IV. HYPEROODON.*

TEETH or protuberances on the palate.

FIN dorsal, one.

Hyperoodon Butskopf. <i>De la</i>	Goose-beaked Whale. <i>Pontop.</i>	1. BOTTLE-
<i>Cepede. Hist. des Cet.</i> 319.	<i>Norway</i> , 123.	HEAD.
Butskopf. <i>Marten's Spitzberg.</i>	But-head. <i>Egede's Greenland.</i>	
124.	75.	
Bottle-head, or Flounders-	Beaked Whale. <i>Brit. Zool.</i>	
head. <i>Dale's Harwich</i> , 411.	4to. iii. 53.	
<i>tab.</i> 14.		

THIS species was taken near *Maldon*, 1717, and thus described by *Dale* and *Marten*.

The length was fourteen feet, the circumference seven and an half; the body very thick; the head like that of a dolphin; the forehead high, the nose depressed, and of the same thickness in its whole length, not unlike the beak of a bird; in the mouth were no teeth; the eyes were large, the eyelids small, and placed a little above the line of the mouth; the spout-hole was on the top of the head, semicircular, with the corners pointed towards the tail. The pec-

DESCRIP-
TION.

* A genus formed by *de la Cepede* from the circumstance of the *teeth* being placed *upon* the palate. *Ed.*

BOTTLE-HEAD HYPEROODON. CL. IV.

toral fins were seventeen inches long; the back fin was placed rather nearer the tail than the head, and was a foot long; the breadth of the tail was three feet two inches.

These fish sometimes grow to the length of twenty feet; they make but little noise in blowing, are very tame, come very near the ships, and will accompany them for a great way.

[A fish, which we presume to be of this species, was found on the recess of the tide in the new cut of the river *Dee*, below *Chester*, in *October* 1785; its length was twenty-four feet, but the girth did not exceed twelve feet. In the periodical papers of the time it is described as having no *teeth* but a vast quantity of small irregular sharp protuberances in the orifice of the throat, and ten strong hard protuberant *bones* placed horizontally in the upper and under jaw; the eyes were of the size of those of an ox and situated near the mouth; the nose was hard and prominent; the body covered with a thin skin.

Two others, probably a dam and its cub, were left on the sands below *Aber* in *Caernarvonshire*, on the recess of the tide, in the year 1799. One was about twenty-seven feet in length, the other eighteen; the extent of the tail of the larger was six feet. In the



1. (P. 85.)



3. (App.)



5. (P. 91.)



2. (P. 80.)



4. (P. 82.)

stomach of one was a prodigious quantity of the undigested remains of the *Sepia Loligo*, which forms the principal food of most of the whale tribe. Unfortunately they were so much mutilated when the reverend *Hugh Davies* had an opportunity of seeing them, that he was unable to form any particular description. ED.

GENUS V. DOLPHIN.

TEETH in both jaws.

1. COMMON. *Δελφίς*. *Arist. Hist. an. lib.* vi. c. 12. *Δελφύς*. *Ælian lib.* i. c. 18. *Delphinus Plinii, lib.* ix. c. 8. *Le Dauphin, ou oye de mer. Belon Poiss.* 7. *Delphinus. Rondel.* 459. *Gesner pisc.* 319. *Caii opusc.* 113. *Delphinus Antiquorum. Wil. Ichth.* 28. *Raii Syn. pisc.* 12.
- Delphinus corpore longo subtereti, rostro longo acuto. Arted. Syn.* 105. *Le Dauphin. Brisson Cet.* 233. *De la Cepede. Hist. des Cet.* 250. *tab.* 15. *f.* 1. *Delphinus Delphis. Gm. Lin.* 230. *Dolphin. Borlase Cornwall,* 264. *tab.* 27. *Crantz. Greenl.* i, 115.

HISTORIANS and philosophers seem to have contended who should invent most fables concerning this fish. It was consecrated to the Gods, was celebrated in the earliest time for its fondness of the human race, was honored with the title of the *Sacred Fish*,* and distinguished by those of *Boy-loving*, and *Philanthropist*. It gave rise to a long train of inventions, proofs of the credulity and ignorance of the times.

* *Athenæus*, 281.

Aristotle steers the clearest of all the antients from these fables, and gives in general so faithful a natural history of this animal, as evinces the superior judgment of that great philosopher, in comparison to those who succeeded him. But the elder *Pliny*, *Ælian*, and others, seem to preserve no bounds in their belief of the tales related of this fish's attachment to mankind.

*Pliny** the younger (apologizing for what he is going to say) tells the story of the enamoured dolphin of *Hippo* in a most beautiful manner. It is too long to be transcribed, and would be injured by an abridgment; therefore we refer the reader to the original, or to Mr. *Melmoth's* elegant translation.

Scarcely an accident could happen at sea but the dolphin offered himself to convey to shore the unfortunate. *Arion*, the musician, when flung into the ocean by the pirates, is received and saved by this benevolent fish.

Inde (fide majus) tergo Delphina recurvo,
 Se memorant oneri supposuisse novo.
 Ille sedens citharamque tenens, pretiumque vehendi
 Cantat, et æquoreas carmine mulcet aquas.
Ovid. Fasti, lib. ii. 113.

* *Epist. lib. ix. ep. 33.*

But (past belief) a Dolphin's arched back
 Preserved *Arion* from his destined wrack;
 Secure he sits, and with harmonious strains
 Requites his bearer for his friendly pains.

We are at a loss to account for the origin of those fables, since it does not appear that the dolphin shews a greater attachment to mankind than the rest of the cetaceous tribe. We know that at present the appearance of this fish, and the porpesse, are far from being esteemed favorable omens by the seamen; for their boundings, springs, and frolics in the water, are held to be sure signs of an approaching gale.

It is from their leaps out of that element that they assume a temporary form that is not natural to them, but which the old painters and sculptors have almost always given them. A dolphin is scarcely ever exhibited by the antients in a strait shape, but incurvated: such are those on the coin of *Alexander the Great*, which is preserved by *Belon*, as well as on several other pieces of antiquity. The poets describe them much in the same manner, and it is not improbable but that the one had borrowed from the other:

Tumidumque pando transilit dorso mare
 Tyrrhenus omni piscis exsultat freto,
 Agitatque gyros.

Senec. Trag. Agam. 450.

Upon the swelling waves the dolphins shew
Their bending backs, then swiftly darting go,
And in a thousand wreaths their bodies throw.

The natural shape of the dolphin is almost strait, the back being very slightly incurvated, and the body slender; the nose is long, narrow, and pointed, not much unlike the beak of some birds, for which reason the *French* call it *L'oye de mer*. It has in the upper jaw from twenty-four to thirty teeth on each side, and in the lower from twenty to twenty-six on each side, making, in the whole, from eighty-eight to one hundred and twelve.* These teeth are rather above an inch long, conic at their upper end, sharp pointed,† bending a little in. They are placed at small distances from each other, so that when the mouth is shut, the teeth of both jaws lock into one another. The spout-hole is placed in the middle of the head. The back fin is high, triangular, and placed rather nearer to the tail than to the head; the pectoral fins situated low; the tail is semilunar; the skin is

DESCRIP-
TION.

* The above numbers are given on the authority of the reverend *Hugh Davies*, who, in the year 1793, had an opportunity of examining near a dozen of the species which were cast ashore near *Caernarvon*. ED.

† *Plate 3. fig. 5.*

smooth, the color of the back and sides dusky ; the belly whitish.

It swims with great swiftness : its prey is fishes.

It was, in the reign of queen *Elizabeth*, reckoned a great delicacy : Doctor *Caius** says, that one which was taken in his time, was thought a present worthy the Duke of *Norfolk*, who distributed part of it among his friends. It was roasted and dressed with porresse sauce, made of crumbs of fine white bread, mixed with vinegar and sugar.

This species of dolphin must not be confounded with that to which seamen give the name, the latter being quite another kind of fish, the *Coryphæna Hippuris* of *Linnaeus*,† and the *Dorado* of the *Portuguese*, described by *Willughby*, p. 213.

* *Opusc.* 116.

† *Gen. Lin.* 1189.

- Φώκαια. *Arist. hist. an. lib.*
vi. c. 12. *Tursio Plinii*,
lib. ix. c. 9.
- Le Marsouin. *Belon.*
- Tursio. Rondel.* 474. *Gesner*
pisc. 711.
- Porpesse. *Wil. Icth.* 31. *Raii*
Syn. pisc. 13. *Crantz's*
Greenl. i. 114. *Kolben's*
Hist. Cape, ii. 200.
- Le Marsouin. *Bloch. icht.* iii.
tab. 92.
- Le Marsouin. *Brisson Cet.* 2. PORPESSE.
234.
- De la Cepede. Hist. des Cet.*
287. *tab.* 15. *fig.* 2.
- Delphinus corpore fere coni-*
formi, dorso lato, rostro sub-
acuto. Arted. Synon. 104.
- Delphinus Phocæna. Gm. Lin.*
229.
- Marswin, Tumblare. *Faun.*
Suec. No. 51.

PORPESSES are found in vast multitudes in all parts of the sea that washes these islands, but in greatest numbers at the time when fish of passage appear, such as mackrel, herrings, and salmon, which they pursue up the bays with the same eagerness as a pack of dogs does a hare. In some places they almost darken the sea as they rise above water to take breath: they not only seek for prey near the surface, but often descend to the bottom in search of sand eels, and sea worms, which they root out of the sand with their noses in the same manner as hogs do in the fields for their food.

Their bodies are very thick towards the head, but grow slender towards the tail, forming the figure of a cone. The nose projects a little, is

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TION.

much shorter than that of the dolphin, and is furnished with very strong muscles, which enables it the readier to turn up the sand. In each jaw are forty-eight teeth, small, sharp pointed, and a little moveable; like those of the dolphin, they are so placed, that the teeth of one jaw lock into those of the other, when closed. The tongue is flat, pectinated at the edges, and fastened down to the bottom of the mouth; the eyes are small; the spout-hole on the top of the head; on the back is one fin placed rather below the middle; on the breast are two fins; the tail is semilunar. The color of the porpesse is generally black, and the belly whitish, not but that they sometimes vary, for in the river *St. Laurence* there is a white kind, and Doctor *Borlase*, in his voyage to the *Scilly* isles, observed a small species of cetaceous fish, which he calls *thornbacks*, from their broad and sharp fin on the back, some of these were brown, some quite white, others spotted; but whether they were only a variety of this fish, or whether they were small grampuses, which are also spotted, we cannot determine.

The porpesse is remarkable for the vast quantity of the fat or lard that surrounds the body, which yields excellent oil: from this lard,

or from their rooting like swine, they are called in many places *sea hogs*; the *Germans* call them *meerschwein*; the *Swedes*, *marsuin*; and the *English*, *porpesse*, from the *Italian*, *porco pesce*.

It would be curious to trace the revolutions of fashion in the article of eatables; what epicure first rejected the Sea-Gull and Heron; and what delicate stomach first nauseated the greasy flesh of the Porpesse. This latter was once a royal dish, even as late as the reign of *Henry VIII.* and from its magnitude must have held a very respectable station at the table; in a household book of that prince, extracts of which are published in the third volume of the *Archæologia*, it is ordered that if a Porpesse should be too big for a horse-load, allowance should be made to the purveyor. I find that this fish continued in vogue even in the reign of *Elizabeth*.

3. GRAMPUS. Orca *Plinii*, lib. ix. c. 6.
 L'oudre ou grand marsouin.
Belon, 13.
 Orca. *Rondel*. 483. *Gesner*
pisc. 635. *Leper*, *Springer*,
Schonevelde, 53.
 Butskopf. *Marten's Spitzberg*.
 93.
 Balæna minor utraque maxilla
 dentata. *Sib. Phaluin*. 17,
18. *Wil*, *Icth.* 40. *Raii*
Syn. pisc. 15.
 L'Epaulard. *Brisson Cet.* 236.
 Le Dauphin Orque. *De la*
Cepede. Hist. des Cet. 298.
tab. 15. *fig.* 1.
 Delphinus orca. *Gm. Lin.*
 231.
 Lopare, Delphinus rostro sur-
 sum repando, dentibus latis
 serratis. *Arted. Syn.* 106.

DESCRIP-
TION.

THIS species is found from the length of fifteen feet to that of twenty-five. It is remarkably thick in proportion to its length, one of eighteen feet being in the thickest place ten feet diameter. With reason then did *Pliny* call this an immense heap of flesh, armed with dreadful teeth.* It is extremely voracious, and will not even spare the porpesse, a congenerous fish. It is said to be a great enemy to the whale, and to fasten on it like a dog on a bull, till the animal roars with pain.

The nose is flat, and turns up at the end. There are† thirty teeth in each jaw; those before

* Cujus imago nulla representatione exprimi possit alia, quam carnis immensæ dentibus truculentis. *Lib. IX. c. 6.*

† *Artedi* counted forty in the lower jaw: in a specimen preserved in the *French* museum, the number of teeth in each jaw did not exceed twenty-two. *Ed.*

are blunt, round, and slender; the farthest sharp and thick; between each is a space adapted to receive the teeth of the opposite jaw when the mouth is closed; the spout-hole is in the top of the neck. In respect to the number and site of the fins, it agrees with the dolphin. The color of the back is black, but on each shoulder is a large white spot, the sides marbled with black and white, the belly of a snowy whiteness.

These sometimes appear on our coasts, but are found in much greater numbers off the *North Cape* in *Norway*, whence they are called the* *North Capers*. These and all other whales are observed to swim against the wind, and to be much disturbed, and tumble about with unusual violence at the approach of a storm.

Linnaeus and *Artedi* say, that this species is furnished with broad serrated teeth, which as far as we have observed, is peculiar to the shark tribe. We therefore suspect that those naturalists have had recourse to *Rondeletius*, and copied his erroneous account of the teeth:

* The Synonym of *Nordkaper* is affixed by *Fabricius* in the *Fauna Groenlandica*, p. 39. to the *Balæna musculus*, but he adds “*De synonymis ejus maxime hæreo, dum etiam apud auctores mira confusio eorum.*” *De la Cèpede* (*Hist. des Cet.* 103. tab. 2. 3.) gives it as the trivial name of his second species of whale, the variety β of the *Balæna mysticetus* of *Gmelin*. ED.

Sir *Robert Sibbald*, who had an opportunity of examining and figuring the teeth of this fish, and from whom we take that part of our description, giving a very different account of them. It will be but justice to observe, that no one of our countrymen ever did so much towards forming a general natural history of this kingdom as Sir *Robert Sibbald*: he sketched out a fine outline of the Zoology of *Scotland*, which comprehends the greatest part of the *English* animals, and, we are told, had actually filled up a considerable part of it: he published a particular history of the county of *Fife*, and has left us a most excellent account of the whales which frequent the coast of *Scotland*. We acknowledge ourselves much indebted to him for information in respect to many of those fish, few of which frequent the southern seas of these kingdoms, and those that are accidentally cast ashore on our coasts, are generally cut up by the country people, before an opportunity can be had of examining them.

- | | | |
|--|---|--------------------|
| Delphinus dorsi pinna altissima, dentibus subconicis parum incurvis. <i>Muller Zool. Dan.</i> 8. | <i>Crantz's Greenland.</i> 152. | 4. GLADI-
ATOR. |
| Delphinus Orca. β . <i>Gm. Lin.</i> 231. | L'Epee de mer. <i>Brisson. Cet.</i> 235. | |
| <i>Marten's Spitzbergen.</i> 84. | Le Dauphin gladiateur. <i>De la Cepede. Hist. des Cet.</i> 302. tab. 5. fig. 5. | |
| | | |

[THIS is chiefly distinguished from the preceding species, of which it has been considered as a variety, by the situation and form of the dorsal fin, it being placed near the head, and its shape resembling that of a sabre. The snout is short and apparently truncated; the jaws of equal length; the teeth sharp; the pectoral fin is above two yards in length, and one in breadth; the tail exceeds ten feet between the extremities of the two lobes. The color of the upper part of the body is dark brown approaching to black; that of the under side a pure white; a black band extends from the tail towards the pectoral fin; between the eye and the dorsal fin is a white crescent.

Six of these fish came up the *Thames* in 1793, one of which, after making considerable resistance, was taken near *Greenwich*; it measured thirty-one feet in length and twelve in its greatest circumference. ED.

DIV. II.

CARTILAGINOUS FISHES.

THIS title is given to all fishes whose muscles are supported by cartilages instead of bones, and comprehends the same genera to which *Linnæus* has given the name of *amphibia nantes*: but the word *amphibia* ought properly to be confined to such animals who inhabit both elements, and can live without any inconvenience for a considerable time, either on land or under water; such as tortoises, frogs, and several species of lizards; and among the quadrupeds, hippopotami, seals, &c. &c. This definition therefore excludes all that form this division.

Many of the cartilaginous fishes are viviparous, being excluded from an egg, which is hatched within them.* The egg consists of

* There is evident proof that the Picked Shark, and probably the White, the Basking, and many others, are oviviparous, or hatch the young within them, whilst the Spotted shark deposits its purse or egg in the same manner as the Ray tribe. In the Philosophical Transactions of 1810, part 2. p. 205. is a most in-

a yolk, and is lodged in a case, formed of a thick tough substance, not unlike softened horn: such are the eggs of the Ray and Shark kinds.

Some again differ in this respect, and are oviparous; such is the Sturgeon, and others.

The young of the Shark genus will, like those of the Viper, take refuge in the stomach of the parent, on the apprehension of danger. If they are cut out while the old one is alive, they appear active and vigorous, but as they exist by the air which she inhales, they cease to live as soon as she ceases to breathe. I have seen thirty-six, each about ten inches long, taken out of the stomach of the Tope Shark.

Cartilaginous fishes breathe through certain apertures, placed either beneath, as in the Rays; on the sides, as in the Sharks, &c; or on the top of the head, as in the Pipe-fish; for they have not covers to their gills like the bony fishes.

genious treatise by *Everard Home*, Esq. on this subject, and on the aeration of the foetal blood in different classes of animals.
ED.

GENUS VI. LAMPREY.

BODY slender, eel-shaped.

APERTURES seven on each side: one on the top of the head.

FINS pectoral or ventral, none.

- | | | |
|---------|---|---|
| 1. SEA. | La Lamproye de mer. <i>Belon</i> ,
66. | <i>Petromyzon marinus</i> . P. ore
intus papilloso, pinna dorsali
posteriori a cauda distincta. |
| | Lampetra. <i>Rondel.</i> 398. | <i>Gm. Lin.</i> 1513. <i>Faun. Suec.</i> |
| | Lampreda. <i>Gesner. Paralip.</i>
22. <i>Pisc.</i> 590. | No. 292. |
| | Lamprey, or Lamprey Eel.
<i>Wil. Icth.</i> 105. | La Lamproie. <i>Bloch. ichth.</i> iii.
31. <i>tab.</i> 77. |
| | Lampetra. <i>Raii Syn. pisc.</i> 35. | Le Petromyzon Lamproie. <i>De</i> |
| | <i>Petromyzon maculosus ordini-</i>
<i>bus dentium circiter viginti.</i> | <i>la Cepede. Hist. des Pois-</i>
<i>sons.</i> i. 3. <i>tab.</i> 1. <i>fig.</i> 1—5. |
| | <i>Arted. synonym.</i> 90. | |

LAMPREYS are found at certain seasons of the year in several of our rivers, but the *Severn* is the most noted for them.* They are a sea fish, but, like salmon, quit the salt waters, and ascend rivers the latter end of the winter, or beginning of spring, and after a stay of a few months return again to the ocean, a very few

* They are also found in the most considerable of the *Scotch* and *Irish* rivers.

SEA LAMPREY.



LESSER LAMPREY. (P. 106)



PRIDE LAMPREY. (P. 107)



excepted. The best season for them is in the months of *March*, *April*, and *May*; for they are more firm when just arrived out of the salt water than they are afterwards, being observed to be much wasted, and very flabby at the approach of hot weather. They are taken in nets along with salmon and shad, and sometimes in weels laid in the bottom of the river.

It has been an old custom for the city of *Gloucester*, annually, to present his majesty with a lamprey pye, covered with a large raised crust. As the gift is made at *Christmas*, it is with great difficulty the corporation can procure any fresh lampreys at that time, though they give a guinea a-piece for them, so early in the season.

They are reckoned a great delicacy, either when potted or stewed, but are a surfeiting food, as one of our monarchs fatally experienced; *Henry I.*'s death being occasioned by a too plentiful meal of this fish. It appears, that notwithstanding this accident, they continued in high esteem; for *Henry IV.* granted protections to such ships as brought over lampreys for the table of his royal consort.* His successor issued out a warrant to *William* of

* *Rymer*, viii. 429.

Nantes, for supplying him and his army with lampreys, wheresoever they happened to march.* Directions were afterwards given that they should be taken between the mouth of the *Seine* and *Harfleur*.

DESCRIP-
TION.

Lampreys are sometimes found so large as to weigh four or five pounds. The mouth is round and placed rather obliquely below the end of the nose; the edges are jagged, which enable them to adhere the more strongly to the stones, as their custom is, and which they do so firmly as not to be drawn off without some difficulty. We have heard of one weighing three pounds, which was taken out of the *Esk*, adhering to a stone of twelve pounds weight, suspended at its mouth, from which it was forced with no small pains. There are in the mouth twenty rows of small teeth, disposed in circular order, and placed far within. The color of the body is dusky, irregularly marked with dirty yellow, which gives the fish a disagreeable look.

NOT THE
MURÆNA.

We believe that the antients were unacquainted with this fish; so far is certain, that which Doctor *Arbuthnot*, and other learned men, render by the word *lamprey*, is a species unknown in our seas, being the *muræna* of

* *Rymer*, ix. 544.

Ovid, *Pliny*, and others, for which we want an *English* name. This fish, the *Lupus* (our Basse) and the *Myxo** (a species of mullet) formed that pride of *Roman* banquets, the *Tripatinum*,† so called according to *Arbutnot*, from their being served up in a machine with three bottoms.

The words *Lampetra* and *Petromyzon*, are but of modern date, invented from the nature of the fish; the first *a lambendo petras*, the other from Πέρρος, and Μύσσω, because they are supposed to lick, or suck the rocks.

* Perhaps the species called by *Rondeletius*, *Muge*, and *Maxon*. de Pisc. P. 295.

† Atque ut luxu quoque aliqua contingat auctoritas figlinis, *Tripatinum*, inquit *Fenestella*, appellabatur summa cænarum lautitia: una erat *Murænarum*, altera *Luporum*, tertia *Myxonis* piscis. *Plinii* Hist. Nat. lib. xxxv. c. 12.

2. LESSER. La Lamproye d'eau douce. Nein-oga, natting. *Faun.*
Belon, 67. *Succ.* No. 290. Petromyzon
 Lampredæ alterum genus. pinna dorsali posteriori an-
Gesner pisc. 597. gulata. *Ibid.*
 Lampetræ medium genus. *Gronov. Zooph.* No. 159.
Wil. Ichth. 106. *Raii Syn.* La petite Lamproie. *Bloch.*
pisc. 35. *ichth.* iii. 34. tab. 78. fig. 1.
 Neunaugen. *Kram.* 282. Le Petromyzon Pricka. *De la*
 Petromyzon fluviatilis. *Lin.* *Cepede. Hist. des Poissons,*
Syst. 394. *Gm. Lin.* 1514. i. 18.

DESCRIP-
TION.

THIS species sometimes grows to the length of ten inches. The mouth is formed like that of the preceding; on the upper part is a large bifurcated tooth; on each side are three rows of very minute ones; on the lower part are seven teeth, the exterior of which on each side is the largest. The irides are yellow. In this, as in all the other species, there is between the eyes, on the top of the head, a small orifice of great use to clear the mouth of the water that remains on its adhering to the stones, for through that orifice it ejects the fluid in the same manner as cetaceous fish. On the lower part of the back is a narrow fin, beneath that rises another, which, at the beginning, is high and angular, then grows narrow, surrounds the tail, and ends near the anus. The color of the back is brown

or dusky, and sometimes mixed with blue; the whole under side silvery.

These are found in the *Thames*, *Severn*, and *Dee*, are potted with the larger kind, and are by some preferred to it, as being milder tasted. Vast quantities are taken about *Mortlake*, and sold to the *Dutch* for bait for their cod fishery. Above 450,000 have been sold in a season at forty shillings per thousand. Of late, about 100,000 have been sent to *Harwich* for the same purpose. It is said that the *Dutch* have the secret of preserving them till the Turbot fishery.

Une Civelle, un Lamproyon. <i>Belon</i> , 67.	<i>Syst.</i> 394. <i>Gm. Lin.</i> 1515.	3. PRIDE.
Lampetra parva et fluviatilis. <i>Rondel. pisc. fl.</i> 202.	Lin-ahl. <i>Faun. Suec.</i> No. 291.	
Lampreda minima. <i>Gesner</i> <i>pisc.</i> 598.	Petromyzon pinna dorsali posteriori lineari, labio oris latero postico lobato. <i>Ibid.</i>	
Pride. <i>Plot, Oxf.</i> 182. <i>Plate</i> x.	Uhlen. <i>Kram.</i> 384.	
Lampern, or Pride of the <i>Isis</i> . <i>Wil. Ichth.</i> 104. <i>Raii Syn.</i>	<i>Gronov. Zooph.</i> No. 160.	
<i>pisc.</i> 35.	Le Lamprillon. <i>Bloch. icht.</i> iii. 37. <i>tab.</i> 78. <i>fig.</i> 2.	
Petromyzon branchialis. <i>Lin.</i>	Le Petromyzon Lamproyon. <i>De la Cope. Hist. des</i> <i>Poissons.</i> i. 26. <i>tab.</i> 2. <i>fig.</i> 1.	

WE have seen these of the length of eight inches, and about the thickness of a swan's quill, but they are generally much smaller.

They are frequent in the rivers near *Oxford*, particularly the *Isis*, but are not peculiar to that county, being found in other of the *English* rivers, where, instead of concealing themselves under the stones, they lodge in the mud, and never are observed to adhere to any thing like other lampreys.

DESCRIP-
TION.

The body is marked with numbers of transverse lines, that pass across the sides from the back to the bottom of the belly, which is divided from the mouth to the anus by a straight line. The back fin is not angular like that of the former, but of an equal breadth. The tail is lanceolated, and sharp at the end.

GENUS VII. HAG.

EYES none.

BODY slender carinated beneath.

MOUTH at the extremity, cirrated.

JAWS both pinnated.

TAIL surrounded by an adipose or rayless fin,
extending under the belly.

Gastrobranchus cœcus. <i>G. lividus subltus pallidior, ore cirris octo. Shaw. Gen. Zool. v. part. ii. 264. tab. 134.</i>	<i>Mus. Ad. Fred. I. 91. tab. viii. f. 4.</i>	1. GLUTINOUS.
Myxine glutinosa. <i>Gm. Lin. 3082.</i>	<i>Lampetra cæca. Wil. icht. 107. Raii pisc. 36.</i>	
<i>Mull. prod. Z. D. 227.</i>	<i>L'Aveugle. Bloch icht. xii. p. 51. tab. 413.</i>	
<i>Fabric. Faun. Groenl. 344.</i>	<i>Le Gastrobranche aveugle. De la Cepede. Hist. des Poissons. 1. 525.</i>	
<i>Putz. Faun. Suec. 2086.</i>	<i>Br. Zool. iv. 33.</i>	

[THIS singular fish which, in the former edition of the *British Zoology*, was ranked among the *Vermes*, is restored to the order in which *Ray* had placed it, who justly observes, that it resembles the Lamprey in almost every respect, except in being deprived of the organs of vision. Its usual length in these seas, is from four to eight inches, but in the *Indian Ocean* it grows nearly to the size of the common eel.

ED.]

This species is amply described in the definition. It enters the mouths of other fish when on the hooks attached to the lines which remain a tide under water, and totally devours the whole except the skin and bones. The *Scarborough* fishermen often take it in the *robbed fish* on drawing up their lines. They call it the *Hag*. *Linnæus* attributes to it the property of turning water into glue, which arises from its power of exsuding a viscous fluid from the double row of pores which extend beneath the body from the head to the tail.

GENUS VIII. RAY.

BODY broad, flat, and thin.

APERTURES five on each side placed beneath.

MOUTH situated quite below.

* With sharp teeth.

- | | | |
|--|---------------------------------------|-----------|
| Batis? <i>Arist. hist. an. Lib. i.</i> | Raia varia, dorso medio gla- | 1. SKATE. |
| c. 5. <i>Lib. vi. c. 10. Oppian</i> | bro, unico aculeorum or- | |
| <i>Halieut. i. 103.</i> | dine in cauda. <i>Arted. synonym.</i> | |
| Raia undulata sive cinerea. | 102. | |
| <i>Rondel. 346. Gesner pisc.</i> | <i>Gronov. Zooph. No. 157.</i> | |
| 791. | La Raye cendrée. <i>Bloch. icht.</i> | |
| The Skate, or Flaire. <i>Wil.</i> | iii. 50. <i>tab. 79.</i> | |
| <i>Ichth. 69. Raii Syn. pisc. 25.</i> | La Raie Batis. <i>De la Cepede,</i> | |
| Raia Batis. <i>Lin. syst. 395.</i> | <i>Hist. des Poissons. i. 35.</i> | |
| <i>Gm. Lin. 1505.</i> | | |

THIS species is the thinnest in proportion to its bulk of any of the genus, and also the largest, some weighing nearly two hundred pounds.

The nose, though not long, is sharp-pointed ; above the eyes is a set of short spines ; the whole upper part of that we examined was of a pale brown ; Mr. *Ray* says, some he saw were streaked with black ; the lower part is white, marked with great numbers of minute black

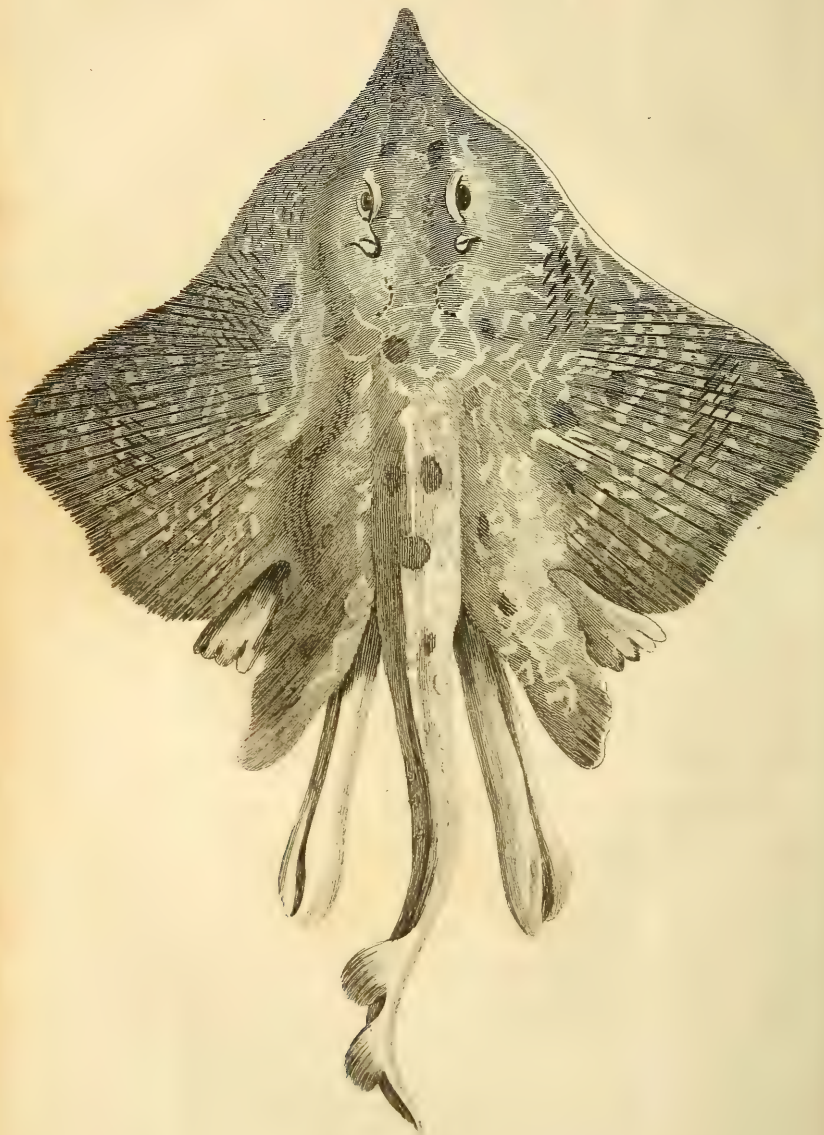
DESCRIP-
TION.

spots; the jaws are covered with small granulated but sharp-pointed teeth. The tail is of a moderate length; near the end are two fins; along the top of it is one row of spines, and on the edges are irregularly dispersed a few others, which makes us imagine with Mr. *Ray*, that in this respect these fishes vary; some having one, others more orders of spines on the tail. It is remarked that in the males of this species the fins are full of spines.

GENERA-
TION.

Skates generate in *March* and *April*, at which time they swim near the surface of the water, several of the males pursuing one female; and adhere so fast during coition, that the fishermen frequently draw up both together, though only one has taken the bait. The females begin to cast their *purses*, as the fishermen call them (the bags in which the young are included) in *May*, and continue doing so till *September*. In *October* they are exceedingly poor and thin, but in *November* they begin to improve, and grow gradually better till *May*, when they are in the highest perfection. The males go sooner out of season than the females.

SHARP NOSED RAY.



Bov? <i>Arist. hist. an. Lib. v.</i> c. 5. <i>Oppian Halieut. ii.</i> 141.	<i>Raia oxyrinchus. Lin. Syst.</i> 395. <i>Gm. Lin.</i> 1506.	2. SHARP- NOSED.
<i>Bos Ovidii? 94. Plinii, Lib.</i> ix. c. 24.	<i>Raia varia tuberculis decem</i> <i>aculeatis in medio dorso.</i> <i>Arted. Synon.</i> 101.	
<i>Raia oxyrhincus. Rondel.</i> 347. <i>Gesner pisc.</i> 792.	<i>Le Raye lisse. Bloch ichth.</i> iii. 52. <i>tab.</i> 80.	
<i>Wil. Ichth.</i> 71. <i>Raii Syn. pisc.</i> 26.	<i>La Raie oxyrinque. De la Ce-</i> <i>pede Hist. des Poissons, i.</i> 72. <i>tab.</i> 4. <i>fig.</i> 1.	

IN fishing in the *Menai* (the strait that divides *Anglesey* from *Caernarvonshire*) *July* 1768, we took one of this species, whose length was nearly seven feet, and breadth five feet two inches; when just brought on shore, it made a remarkable snorting noise.

The nose was very long, narrow, and sharp-pointed, not unlike the end of a spoutoon; the body was smooth, and very thin in proportion to the size; the upper part ash colored, spotted with numerous white spots, and a few black ones; the tail was thick; towards the end were two small fins, on each side was a row of small spines, with another row in the middle, which ran some way up the back; the lower part of the fish was quite white; the mouth very large, and furnished with numbers of small sharp teeth bending inwards.

DESCRIP-
TION.

On its body we found the *Hirudo muricata*, which adhered very strongly, and when taken off left a black impression.

This fish has been supposed to be the *Bos* of the antients, which was certainly some enormous species of Ray, though we cannot pretend to determine the particular kind : *Oppian* styles it,

Ευρυτατος παντεσσι μετ' ιχθυσιν.

Broadest among fishes.

He adds an account of its fondness for human flesh, and the method it takes of destroying men, by over-laying and keeping them down by its vast weight till they are drowned. *Phile* gives much the same relation.* We are inclined to give them credit, since a modern writer,† of undoubted authority, gives the very same account of a fish found in the South Seas, the terror of those employed in the pearl fishery. It is a species of ray, called there *Manta* or the *Quilt*, from its surrounding and wrapping up the unhappy divers till they are suffocated ; therefore the negroes never go down, without a sharp knife to defend themselves against the assaults of this terrible enemy.

* *De propriet. Anim.* 85.

† *Ulloa's voy.* i. 132. 8vo. edit.

- Raia asteria aspera.* *Rondel.* *La Ronce.* *Bloch ichth.* iii. 62. 3. ROUGH.
352. *tab.* 84.
Gesner pisc. 794. *Wil. Ichth.* *La Raie ronce.* *De la Cepede*
78. *Hist. des Poissons.* i. 79.
Raii Syn. pisc. 28. *tab.* 5. *fig.* 1—3.
Raia rubus. *Gm. Lin.* 1507.

I TOOK this species in *Loch Broom* in the shire of *Ross*.

The length from the nose to the tip of the tail was two feet nine inches ; the tail was almost of the same length with the body ; the nose very short ; before each eye was a large hooked spine, and behind each, another beset with lesser spines ; the upper part of the body was of a cinereous brown mixed with white, and spotted with black, and entirely covered with small spines ; on the tail were three rows of great spines ; all the rest of the tail was irregularly beset with lesser ; the fins, and under side of the body were equally rough with the upper*.

DESCRIP-
TION.

* Mr. *Donovan*, in his *History of British Fishes*, *tab.* 103, has figured a species he calls the Mirror Ray, the *Raja miraletus* of *Linnaeus*, resembling, in many respects, the Rough Ray, of which it may perhaps prove a variety. On each wing is a dark purple spot, encircled by a ring of shining silvery green, round which are five equi-distant contiguous spots of a deep purple color. The specimen was procured in the *London* markets. It may here be remarked, that the name of *Hommelin* given by the *Scotch* to the Rough Ray, is appropriated by *Willughby* to the Skate. ED.

4. FULLER. *Raia fullonica*. *Rondel.* 357.

Gesner pisc. 797.

Raia aspera nostras, the white horse. *Wil. Ichth.* 78. *Raii*

Syn. pisc. 26.

Raia fullonica. *Gm. Lin.* 1507.

Raia dorso toto aculeato, acu-

leorum ordine simplici ad oculos, duplici in cauda.

Arted. Syn. 101. *Gronov.*

Zooph. No. 155.

La Raie chardon. *De la Cepede Hist. des Poissons*, i.

78.

THIS species derives its *Latin* name from the instruments fullers make use of in smoothing cloth, the back being rough and spiny.

DESCRIP-
TION.

The nose is short and sharp; at the corner of each eye are a few spines; the membrane of nictitation is fringed; the teeth small, and sharp; on the upper part of the pectoral fins are three rows of spines pointing towards the back, crooked, like those on a fuller's instrument; on the tail are three rows of spines, the middle of which reaches up part of the back; the tail is slender, and rather longer than the body. The color of the upper part of the body is cinereous, usually marked with numerous black spots; the lower part is white. This, as well as most other species of Rays, vary a little in color, according to age.

It grows to a size equal to the Skate; and is common at *Scarborough*, where it is called the *White Haus*, or Gullet.

Br. Zool. iii. 87.

La Raie chagrinée. *De la Ce-* 5. SHAGREEN.

Shaw Gen. Zool. v. part ii. p.

pede Hist. des Poissons. i.

275.

81.

I MET with this species at *Scarborough*, where it is called the *French Ray*.

It increases to the size of the Skate; is fond of Launces, or Sandeels, which it takes greedily as a bait.

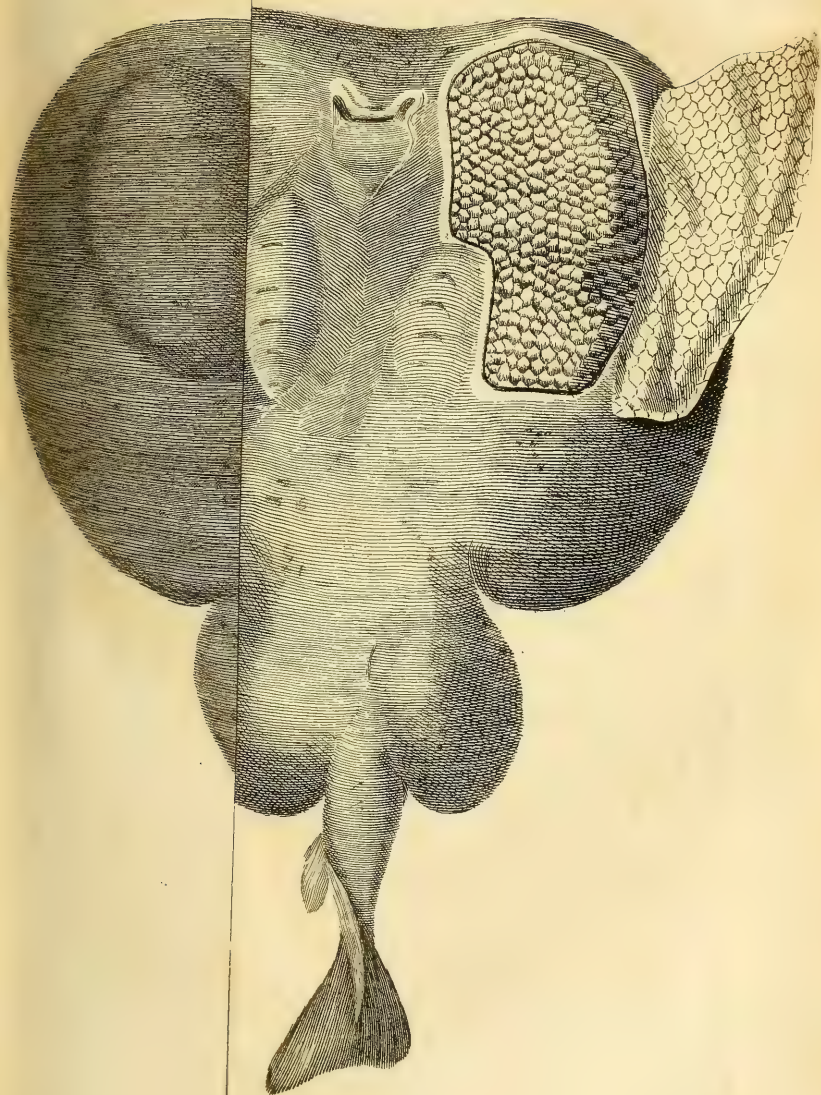
The form is narrower than that of the common kinds: the nose long and very sharp; the pupil of the eye, sapphirine; on the nose are two short rows of spines; on the corner of the eyes another row of a semicircular form; on the tail are two rows, continued a little up the back, small, slender, and very sharp; along the sides of the tail is a row of minute spines, intermixed with innumerable little *spiculæ*. The upper part of the body is of a cinereous brown, covered closely with minute shagreen-like tubercles, resembling the skin of the dog-fish; the under side of the body is white; from the nose to the beginning of the pectoral fins is a tuberculated space; the teeth are slender, and sharp as needles.

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TION.

6. ELECTRIC. *Ναρκη*. *Arist. Hist. an. lib.*
v. c. 5. ix. c. 37. *Oppian*
Halieut. i. 104. ii. 56. iii.
149.
Torpedo. *Plinii lib.* ix. c. 42.
La Tremble ou Torpille. *Be-*
lon 78, 81.
Torpedo. *Rondel. Gesner pisc.*
Torpedo. *Cramp Fish. Wil.*
Ichth. 81. *Raii Syn. pisc.* 28.
Smith's Hist. Waterford, 271.
Raia Torpedo. *Lin. Syst.* 395.
Gm. Lin. 1504.
Raia tota lævis. Arted. Synon.
102. *Gronov. Zooph. No.*
153. *tab.* 9.
Walsh in Ph. Tr. 1773. p. 461.
1774. p. 464. *Hunter. ib.*
1773. p. 481. *Cuvendish. ib.*
1776. p. 196.
Torpedo Ray. Shaw Gen. Zool.
v. *part* 2. 297.
La Torpille. Bloch ichth. iv.
40. *tab.* 122.
La Raie Torpille. De la Ce-
pede Hist. des Poissons. i.
82. *tab.* 6. *fig.* 1.

THE narcotic or numbing quality of this fish has been taken notice of in all ages: it is so powerful when the fish is alive, as instantly to deprive the person who touches it of the use of his arm, and even to affect him if he touches it with a stick. *Oppian* goes so far as to say, that it will benumb the astonished fisherman, even through the whole length of line and rod.

Ναὶ μὲν καὶ ΝΑΡΚΗ σφέτερον νόον οὐκ ἀπολείπει,
Πληγῇ ἀνιάζουσα. Τιταινομένη δ' ὀδυνησιν
Ὀρμιῇ λαγόνας προστύσσεται. Αἰψα δὲ χαιτήσ
Ἰππείης δόνακος τε διέδραμεν, ἔς δ' ἀλιῆος
Δεξιτερὴν ἔσκηψε φερώνυμον ἰχθυος ἄλγος.
Πολλάκι δ' ἐκ παλάμης κίλαμος πέσεν, ὅπλ' αὖτε θήρης
Τοῖος γὰρ κρύσταλλος ἐνιζεταὶ αὐτικά χειρί.







The hook'd *Torpedo* ne'er forgets its art,
But soon as struck begins to play its part,
And to the line applies its magic sides :
Without delay the subtile power glides
Along the pliant rod, and slender hairs,
Then to the fisher's hand as swift repairs :
Amaz'd he stands ; his arm's of sense bereft,
Down drops the idle rod ; his prey is left :
Not less benumb'd, than if he'd felt the whole
Of frost's severest rage beneath the *arctic* pole.

But great as its powers are when the fish is in vigor, they are impaired as it declines in strength, and totally cease when it expires. They impart no noxious qualities to it as a food, being commonly eaten by the *French*, who find it more frequently on their coasts than we do on ours. *Galen* even affirms, that the meat of the *Torpedo* is of service to epileptic patients ; and that the shock of the living fish applied to the head is efficacious in removing any pains in that part.

We may mention a double use in this strange power the torpedo is endued with ; the one, when it is exerted as a means of defence against voracious fish, who are at a touch deprived of all possibility of seizing their prey. The other is well explained by *Pliny*, who tells us, it attains by the same powers its end in respect to those fish it wishes to ensnare. *Novit torpedo*

*vim suam, ipsa non torpens ; mersaque in limo se occultat, piscium qui securi supernatantes obtorpuere, corripuens.**

But the acknowledgements of every naturalist are due to the late *John Walsh*, Esquire, for his curious and unwearied researches into the nature of this fish ; and for the first certainty we had of its being a native of our seas. To him I am particularly bound, for being enabled to correct my errors in the former account.

It is frequently seen in *Torbay* ; has been once caught off *Pembroke*, and sometimes near *Waterford* in *Ireland*, and is generally taken, like other flat fish, with the trawl ; but there is an instance of its taking a bait, which vindicates the fine account *Oppian* has left us of this fish. It commonly lies in water of about forty fathoms depth ; and in company with the congenerous Rays.

The torpedo brings forth its young at the autumnal equinox, as affirmed by *Aristotle*. A gentleman of *la Rochelle*, on dissecting certain females of this species, the 10th of *September*, found in the *matrices*, several of the *fæ-*

* “ The *torpedo* is well acquainted with its own powers, though itself never affected by them. It conceals itself in the mud, and benumbing the fish that are carelessly swimming about, makes a ready prey of them.”

tuses quite formed, and nine eggs, in no state of forwardness : superfoetation seems therefore to be a property of this fish.

The food of the torpedo is fish ; a surmullet and a plaice having been found in the stomach of two of them. The surmullet is a fish of that swiftness, that it was impossible for the torpedo to take it by pursuit. Though by their electric stroke, they stupify their prey, yet the crab and sea leech will venture to annoy them.

They will live four and twenty hours out of the sea ; and but very little longer if placed in fresh water. Inhabit sandy places ; and will bury themselves superficially in it, by flinging the sand over, by a quick flapping of all the extremities. It is in this situation that the torpedo gives his most forcible shock, which throws down the astonished passenger, who inadvertently treads upon him.

In our seas it grows to a great size, and above eighty pounds weight. My description was taken from a smaller, which I had the pleasure of doing in company with Mr. *Walsh*. Its length was eighteen inches from the head to the tip of the tail ; the greatest breadth twelve inches. I could not inform myself of its weight ; but that of one, which measured four feet in length, and two and a half in breadth, was

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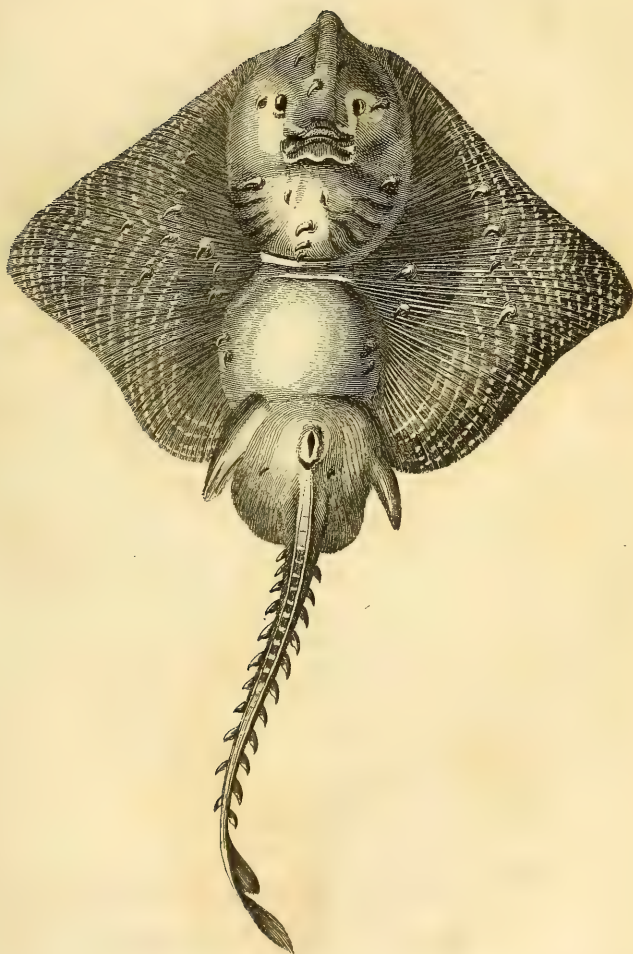
fifty-three pounds, avoirdupoise. The tail was six inches long, pretty thick and round; the caudal fin broad and abrupt; the head and body, which were indistinct, were nearly round, about two inches thick in the middle, attenuating to extreme thinness on the edges: below the body, the ventral fins formed on each side a quarter of a circle; the two dorsal fins were placed on the trunk of the tail. The eyes were small, placed near each other; behind each was a round spiracle, with six small cutaneous rags on their inner circumference; the mouth small; the teeth minute, spicular. The skin was every where smooth; cinereous brown above, white beneath.

** With blunt Teeth.

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|--------------------|--------------------------------------|--------------------------------------|
| 7. THORN-
BACK. | La Raye bouclée. <i>Belon</i> 70. | lois, cartilagine transversa |
| | Raia clavata. <i>Rondel.</i> 353. | abdominali. <i>Arted. Synon.</i> |
| | <i>Gesner pisc.</i> 795. | 94. |
| | Steinroch. <i>Shonevelde</i> , 59. | Racka. <i>Faun. Suec.</i> No. 293. |
| | Thornback. <i>Wil. Ichth.</i> 74. | La Raye bouclée. <i>Bloch ichth.</i> |
| | <i>Ruii Syn. pisc.</i> 26. | iii. 60. <i>tab.</i> 83. |
| | Raia clavata. <i>Lin. Syst.</i> 297. | La Raie bouclée. <i>De la Ce-</i> |
| | <i>Gm. Lin.</i> 1510. | <i>pede Hist. des Poissons</i> , i. |
| | <i>Gronov. Zooph.</i> No. 154. | 128. |
| | R. aculeata dentibus tubercu- | |

THIS common fish is easily distinguished from the others by the rows of strong sharp spines,

THORNBACK. RAY.



THORN-BACK RAY.



disposed along the back and tail. In a large one we saw, were three rows on the back, and five on the tail, all inclining towards its end. On the nose, and on the inner side of the forehead, near the eyes, were a few spines, and others were scattered without any order on the upper part of the pectoral fins. The mouth was small, and filled with granulated teeth; the upper part of the body was of a pale ash color, marked with short streaks of black, and the skin rough, with small tubercles like shagreen; the belly white, crossed with a strong semilunar cartilage beneath the skin; in general the lower part was smooth, having only a few spines on each side. The young fish have very few spines on them, and their backs are often spotted with white, and each spot is encircled with black.

This species frequents our sandy shores, is very voracious, feeds on all sorts of flat fish, is particularly fond of herrings and sand eels, and sometimes eats crustaceous animals, such as crabs. Thornbacks sometimes weigh fourteen or fifteen pounds, but with us seldom exceed that weight.

They begin to generate in *June*, and bring forth their young in *July* and *August*, which (as well as those of the skate) before they are

old enough to breed, are called *maids*. The thornback begins to be in season in *November*, and continues so later than skate, but the young of both are good at all times of the year.

- §. CUVIER. La Raie Cuvier. *De la Cepede* Neill in *Mem. Wern. Soc.*
Hist. des Poissons. i. 141. 554.
tab. 7. f. 1.

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[THIS singular Ray, first described by *de la Cepede*, was taken in the *Frith of Forth* in 1808. It is chiefly distinguished from others of the genus, by the situation of the dorsal fin, which is upright, of an oval shape, and placed in the middle of the back. The nose is pointed, the pectoral fins large and angular; the ventral fins are divided into two portions, one of which seems to represent the true ventral, the other an anal fin; the tail is slender, of the same length as the remainder of the body to the nose, and terminates in a small caudal fin, on the upper side are also two smaller fins connected with the former. A row of spines extends from the first dorsal fin to the origin of the tail, on which are three rows of spines; there are none on the head or the rest of the body. On the upper side are several round or oval spots. The teeth

are blunt. Its general form is rhomboidal; the specimen observed in *Scotland* was about twelve inches broad, and the same in length, exclusive of the tail. ED.

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| <i>Τρυγών. Arist. Hist. an. lib.</i> | Fire Flaire. <i>Raii Syn. pisc.</i> 24. 9. STING. |
| viii. c. 13. ix. 37. <i>Oppian.</i> | Raia Pastinaca. <i>Lin. Syst.</i> |
| <i>Halieut.</i> i. 104. ii. 462. | 396. <i>Gm. Lin.</i> 1509. |
| Pastinaca. <i>Plinii lib.</i> ix. c. 42. | Raia corpore glabro, aculeo |
| 38. | longo antierius serrato, cauda |
| La Pastenade de mer, Tourte- | apterygia. <i>Arted. Synon.</i> |
| relle, ou Tareronde. <i>Belon</i> | 100. <i>Gronov. Zooph.</i> No. |
| 83. | 158. |
| Pastinaca. <i>Rondel.</i> 331. <i>Ges-</i> | La Pastinaque. <i>Bloch ichth.</i> |
| <i>ner pisc.</i> 679. | iii. 57. <i>tab.</i> 82. |
| Steckroche. Grone Tepel. | La Raie Pastenaque. <i>De la</i> |
| <i>Schonevelde</i> , 58. | <i>Cepede Hist. des Poissons.</i> |
| Pastinaca marina lævis. <i>Wil.</i> | i. 114. |
| <i>pisc.</i> 67. | |

THE weapon with which nature has armed this fish, hath supplied the antients with many tremendous fables relating to it. *Pliny*, *Ælian*,* and *Oppian*, have given it a venom that affects even the inanimate creation: trees that are struck by it instantly lose their verdure and perish, and rocks themselves are incapable of resisting the potent poison. The enchantress

* *Hist. an. lib.* ii. c. 36.

Circe, armed her son with a spear headed with the spine of the *Trygon*, as the most irresistible weapon she could furnish him with, and with which he afterwards committed parricide, unintentionally, on his father *Ulysses*.

That spears and darts might, in very early times, have been headed with this bone instead of iron, we have no kind of doubt: that of another species of this fish being still used to point the arrows of some of the *South American Indians*, and is, from its hardness, sharpness, and beards, a most dreadful weapon. But in respect to its venomous qualities, there is not the least credit to be given to the opinion, though it was believed (as far as it affected the animal world) by *Rondeletius*, *Aldrovand*, and others, and even to this day by the fishermen in several parts of the kingdom. It is in fact the weapon of offence belonging to the fish, capable of giving a very bad wound, and which is attended with dangerous symptoms, when it falls on a tendinous part, or on a person in a bad habit of body. As to any fish having a spine charged with actual poison, we must deny our assent to it, though the report is sanctified by the name of *Linnæus*.*

* *Syst. Nat.* i. 348. He instances the *Pastinaca*, the *Torpedo*, and the *Tetrodon lineatus*. The first is incapable of con-

This species does not grow to the bulk of the others: that which we examined was two feet nine inches from the tip of the nose to the end of the tail; to the origin of the tail one foot three inches; the breadth one foot eight. The body is quite smooth, of a shape almost round, and of a much greater thickness, and more elevated form in the middle than any other Rays, but grows very thin towards the edges; the nose is very sharp pointed, but short; the mouth small, and filled with granulated teeth; the irides are of a gold color; behind each eye the orifice is very large; the color of the upper part of the body is a dirty yellow, the middle part of an obscure blue; the lower side white, the tail and spine dusky. The tail is very thick at the beginning; the spine, placed about a third of the length of the former from the body, is about five inches long, flat on the top and bottom, very hard, sharp pointed, and the two sides thin, and closely and sharply bearded the whole way; the tail extends four inches beyond the end of this spine, and grows very slender at the extremity. These fish are observed to shed

DESCRIP-
TION.

veying a greater injury than what results from the meer wound. The second, from its electric effluvia: and the third, by imparting a pungent pain like the sting of nettles, occasioned by the minute spines on its abdomen.

their spine, and to renew it annually; sometimes the new spine appears before the old one drops off, and the *Cornish* call this species *Cardinal Trilost*, or three tailed, when so circumstanced.

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| 10. WHIP. Iaberete? BRAZIL: <i>Marcgrave</i> . 175. | <i>Rondel. pisc.</i> i. 338. |
| [<i>Raia Aquila</i> ? <i>R. corpore glabro, aculeo longo serrato in cauda pennata.</i> <i>Gm. Lin.</i> 1508. | <i>Will. ichth.</i> 64. t. C. 2. app. t. 10. <i>Raii Syn. pisc.</i> 23. |
| <i>Aetog</i> ? <i>Arist. hist. an. lib.</i> v. c. 5. | Eagle Ray? <i>Shaw Gen. Zool.</i> v. part ii. 284. tab. 141. |
| <i>Aquila</i> ? <i>Plinii lib.</i> ix. c. 24. | L'Aigle poisson? <i>Bloch ichth.</i> iii. 54. tab. 81. |
| <i>Pastinaca</i> , secunda species. | Le Raie aigle? <i>De la Cepède Hist. des Poissons</i> , i. 104. tab. 6. fig. 2.*] |

MR. *Travis*, surgeon at *Scarborough*, had, in the summer of 1769, the tail of a Ray brought to him by a fisherman of that town; he had taken it in the sea off the coast, but flung away the body.

DESCRIP-
TION.

It was above three feet long, extremely slender and taper, and destitute of a fin at the end. I believe it to belong to the species called

* The editor has subjoined the above list of references from a suspicion that the fish alluded to by Mr. *Travis*, may prove the Eagle Ray, which grows to the length of fifteen feet, and is found on the *Baltic* as well as on the *Mediterranean* sea. ED.

by the *Brasilians Iaberete* ; and that it is likewise found in the *Sicilian* seas. I once received the tail of one from that island, corresponding with the description Mr. *Travis* gave: I must also add, that it was entirely covered with hard obtuse tubercles.

[A Ray is figured in the 114th plate of Mr. *Donovan's* History of *British* Fishes, under the name of the Starry Ray, so called from the radiated divergent processes, which constitute the base of some of the larger spines. The length of the subject described, does not, exclusive of the tail, exceed three inches. The back is of a deep brown color, thickly beset with spines: a single series extends down the back and tail. ED.

GENUS IX. SHARK.

BODY somewhat cylindrical, growing slenderer towards the tail.

FINS, two on the back.

SKIN rough.

APERTURES, five on the sides of the neck.

MOUTH generally placed far beneath the end of the nose.

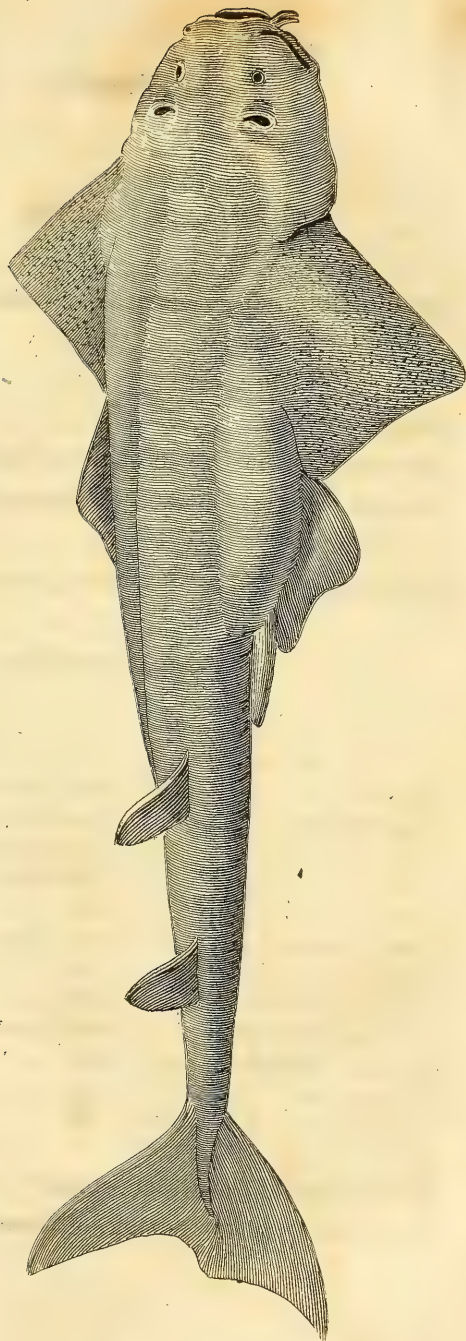
TAIL, upper part longer than the lower,

* Without the anal fin.

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| 1. ANGEL. <i>Πύγξ</i> . <i>Arist. Hist. an. lib. v.</i> | 398. S. pinna ani nulla, |
| c. 5, &c. <i>Athenæus, lib. vii.</i> | caudæ duabus, ore termi- |
| p. 319. | nali, naribus cirrosis. <i>Ibid.</i> |
| <i>Oppian Halieut. i.</i> 388, 742. | <i>Gm. Lin.</i> 1503. |
| <i>Squatina. Plin. lib. ix. c. 12.</i> | Sq. pinna ani carens, ore in |
| <i>Rhina, sc. Squatus. lib.</i> | apice capitis. <i>Arted. Syn.</i> |
| <i>xxxii. c. 11.</i> | 95. |
| L'Ange, ou Angelot de mer. | <i>Gronov. Zooph. No.</i> 151. |
| <i>Belon</i> 69. | L'Angelot de Mer. <i>Bloch</i> |
| <i>Squatina. Rondel.</i> 367. <i>Gesner</i> | <i>ichth. iv.</i> 23. <i>tab.</i> 116. |
| <i>pisc.</i> 899. <i>Wil. Ichth.</i> 79. | Le Squale ange. <i>De la Cepede</i> |
| Monk, or Angel Fish. <i>Raii</i> | <i>Hist. des Poissons. i.</i> 293. |
| <i>Syn. pisc.</i> 26. | <i>tab.</i> 12. <i>fig.</i> 1. |
| <i>Squalus squatina. Lin. Syst.</i> | |

THIS is the fish which connects the genus of Rays and Sharks, partaking something of the

ANGEL SHARK.



THE HISTORY OF THE

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character of both ; yet is an exception to each in the situation of the mouth, which is placed at the extremity of the head. It is not unfrequent on most of our coasts, where it prowls about for prey like others of the kind. It is extremely voracious, and, like the Ray, feeds on flounders and flat fish, which keep at the bottom of the water, as we have often found on opening them. It is extremely fierce and dangerous to be approached ; we knew an instance of a fisherman, whose leg was terribly torn by a large one of this species, which lay within his nets in shallow water, and which he went to lay hold of incautiously.

The aspect of these, as well as of the rest of the genus, have much malignity in them : their eyes are oblong, and placed lengthways in the head, sunk in it, and overhung by the skin, and seem fuller of malevolence than fire.

Their skin is very rough ; the antients made use of it to polish wood and ivory,* as we do at present that of the greater dog-fish. The flesh is now but little esteemed on account of its coarseness and rankness, yet *Archestratus* (as quoted by *Athenæus*, p. 319.) speaking of the fish of *Miletus*, gives this the first place, in

* Qua lignum et eborā poliuntur. *Plin. lib. ix. c. 12.*

respect to its delicacy, of the whole cartilaginous tribe.

DESCRIP-
TION.

They grow to a great size; we have seen them of near an hundred weight. The head is large, the teeth broad at their base, but slender and very sharp above, and disposed in five rows all round the jaws; like those of all Sharks, they are capable of being raised or depressed by means of muscles uniting them to the jaws, not being lodged in sockets as the teeth of cetaceous fish are; the tongue is large; the eyes small; the pupil of a pale green; the irides white, spotted with brown; behind each eye is a semilunar orifice; the back is of a pale ash color, and very rough; along the middle is a prickly tuberculated line; the belly is white and smooth; the pectoral fins are very large, and extend horizontally from the body to a great distance; they have some resemblance to wings, so writers have given this the name it bears in this work; the ventral fins are placed in the same manner, and the double penis is placed in them, which forms another character of the males in this and the last genus; the tail is bifurcated, the upper lobe rather the longer: not very remote from the end on the back are two fins.

- Ἀκανθίας γαλέος. *Arist. Hist.* 397. Sq. pinna ani nulla, 2. PICKED.
un. lib. vii. c. 10. *Oppian* dorsalibus spinosis, corpore
Halieut. i. 380. teretiusculo. *Ibid.* S. acan-
Επίνωτις Athenæi, Lib. vii. thias. *Gm. Lin.* 1501.
L'Esguillats. Belon, 61. Sq. pinna ani nulla, corpore
Galeus acanthias. Rondel. 373. subrotundo. *Arted. Synon.*
Gesner pisc. 607. 94.
Sperhaye, Dornhundert. Scho- *Hai. Faun. Succ. No. 295.*
nevelde, 29. *Gronov. Zooph. 149.*
Galeus acanthias sive spinax. L'Aquillat. Bloch ichth. iii.
Wil. Ichth. 56. 68. tab. 85.
The picked dog, or hound fish. *Le Squalé aiguillat. De la*
Raii Syn. pisc. 21. *Cepede Hist. des Poissons.*
Squalus spinax. Lin. Syst. i. 270.

THE picked Shark or dog fish takes its name from a strong and sharp spine placed just before each of the back fins, distinguishing it at once from the rest of the *British* sharks.

The nose is long, and extends greatly beyond the mouth, but is blunt at the end; the teeth are disposed in two rows, are small and sharp, and bend from the middle of each jaw towards the corners of the mouth. The tail is finned for a considerable space beneath, and the upper part is much the longer; the back is of a brownish ash color; the belly white. It grows to the weight of about twenty pounds.

This species swarms on the coasts of *Scot-*

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TION.

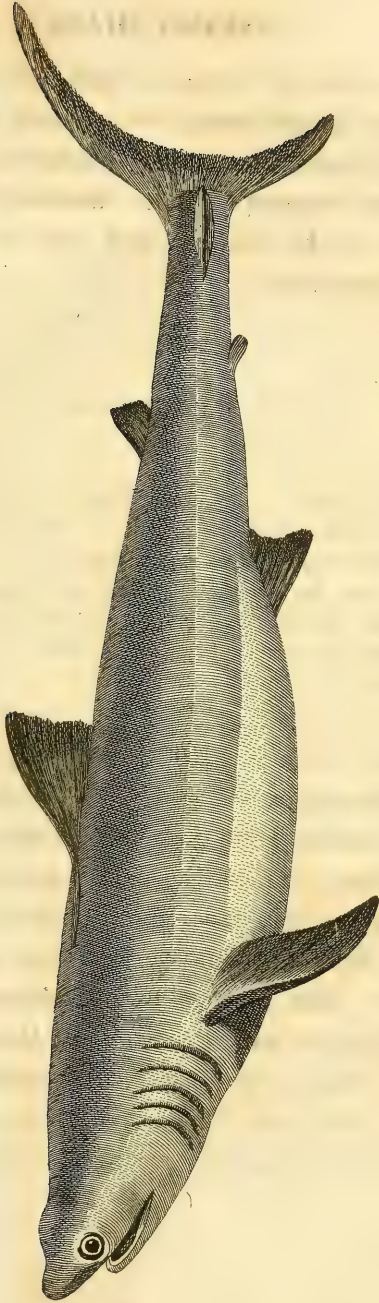
land, where it is taken, split, and dried, and used as a food among the common people. It forms a sort of internal commerce, being carried on women's backs, fourteen or sixteen miles up the country, and sold or exchanged for necessaries.

** With the anal fin.

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| <p>3. BASKING. <i>Squalus maximus</i>. Sq. dentibus caninis, pinna dorsali anteriore majore. <i>Syst. nat.</i> 400. <i>Gm. Lin.</i> 1498.</p> <p>Brugden. <i>Squalus maximus</i>. <i>Gunner Act. Nidros.</i> iii. 33. <i>tab. ii.</i></p> | <p>Sun-fish. <i>Smith's hist. Cork,</i> ii. 292. <i>Hist. Waterford,</i> 271.</p> <p>Le Squalé tres grand. <i>De la Cepede Hist. des Poissons.</i> i. 209.</p> |
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THIS species has been long known to the inhabitants of the south and west of *Ireland* and *Scotland*, and those of *Caernarvonshire* and *Anglesey*; but having never been considered in any other than a commercial view, has till this time remained undescribed by any *English* writer; and what is worse, mistaken for and confounded with the *luna* of *Rondeletius*, the same that our *English* writers call the sun-fish. The *Irish* and *Welsh* give it the same name, from its lying as if to sun itself on the surface

BASKING SHARK:



of the water ; and for the same reason we have taken the liberty of calling it the Basking shark. It was long taken for a species of whale, till we pointed out the branchial orifices on the sides, and the perpendicular site of the tail.

These fish are migratory, or at least it is but in a certain number of years that they are seen in multitudes on the *Welsh* seas, though in most summers a single and perhaps strayed fish appears. They inhabit the northern seas, even as high as the arctic circle. They visited the bays of *Caernarvonshire* and *Anglesey* in vast shoals, in the summers of 1756,* and a few succeeding years, continuing there only the hot months, for they quitted the coast about *Michaelmas*, as if cold weather was disagreeable to them. They appear in the Firth of *Clyde* ; and among the *Hebrides* in the month of *June*, in small droves of seven or eight ; but oftener in pairs, and continue in those seas, till the latter end of *July*, when they disappear.

They seem to have nothing of the fierce and voracious nature of the shark kind, and are often so tame as to suffer themselves to be stroked : they generally lay motionless on the surface, commonly on their bellies, but some-

* Some old people say they recollect the same sort of fish visiting these seas in vast numbers about forty years ago.

times, like tired swimmers, on their backs. Their food seemed to consist entirely of sea plants, no remains of fish being ever discovered in the stomachs of numbers that were cut up, except some green stuff, the half digested parts of *algæ*, and the like. *Linnaeus* says, they feed on *medusæ*. At certain times they are seen sporting on the waves, and leaping with vast agility several feet out of the water. They swim very deliberately, with the dorsal fins above water.

DESCRIP-
TION.

Their length is from three to twelve yards, and sometimes even longer. Their form rather slender, like others of the shark kind; the upper jaw much longer than the lower, and blunt at the end; the mouth placed beneath, and each jaw furnished with numbers of small teeth; those before are much bent, those more remote in the jaws conic and sharp pointed. On the sides of the neck are five large transverse apertures to the gills; on the back two fins; the first very large, not directly in the middle, but rather nearer the head; the other small, and situated near the tail; on the lower part are five others; *viz.* two pectoral fins; two ventral fins, placed just beneath the hind fin of the back; and a small anal fin. Near these, the male has two genitals, as in other sharks; and

between these fins is situated the *pudendum* of the female. The tail is very large, and the upper part remarkably longer than the lower. The upper part of the body is of a deep leaden color; the belly white; the skin is rough, like shagreen, but less so on the belly than the back. Within the mouth, towards the throat, is a very short sort of whalebone.

The liver is of a great size, but that of the female the largest; some weighed above a thousand pounds, and yielded a great quantity of pure and sweet oil,* fit for lamps, and also much used by the people who took them, to cure bruises, burns, and rheumatic complaints. A large fish has afforded to the captors a profit of twenty pounds. They are viviparous, a young one about a foot in length being found in the belly of a fish of this kind.

OIL.

The measurements of one, I found dead on the shore of *Loch Ranza* in the isle of *Arran*, were as follow. The whole length twenty-seven feet, four inches: the first dorsal fin, three feet; the second, one foot; the pectoral fin, four feet; the ventral, two feet; the

* In 1760, one was caught off the coast of *Anglesey*, which measured twenty-six feet, and produced one hundred and fifty gallons of oil. ED.

upper lobe of the tail, five feet; the lower, three.*

They will permit a boat to follow them, without accelerating their motion, till it comes almost within contact; when a harpooner strikes his weapon into them, as near to the gills as possible; but they are often so insensible, as not to move till the united strength of two men have forced in the harpoon deeper. As soon as they perceive themselves wounded, they fling up their tail, plunge headlong to the bottom, and frequently coil the rope round them in their agonies; attempting to disengage the harpoon from them by rolling on the ground, for it is often found greatly bent. As soon as they discover that their efforts are in vain, they swim away with amazing rapidity, and with such violence, that there has been an instance of a vessel of seventy tons having been towed away against a fresh gale. They sometimes run off with two hundred fathoms of line, and with two harpoons in them, and will employ the fishers

* A Basking Shark taken near *Abbotsbury* in *Dorsetshire* in 1801, and exhibited in *London*, was about twenty-eight feet in length, and the extent of the tail, from point to point, eight feet. Its teeth were numerous, amounting, according to the report of the proprietor, to four thousand.

for twelve, and sometimes twenty-four hours, before they are subdued. When killed, they are either hawled on shore, or if at a distance from land, to the vessel's side. The liver (the only useful part) is taken out, and melted into oil in kettles provided for that purpose. A large fish will yield eight barrels of oil; and two of worthless sediment.

The fishers often observe on them a sort of leech of a reddish color, and about two feet long, but which falls off when the fish is brought to the surface of the water, and leaves a white mark on the skin.

- | | |
|--|---|
| Λαμία? <i>Arist. Hist. an. Lib.</i>
v. c. 5. ix. c. 37. | White Shark. <i>Wil. Ichth.</i> 47. 4. WHITE.
<i>Raii Syn. pisc.</i> 18. |
| Λάμνη. <i>Oppian Halieut.</i> i.
370. v. 36, | <i>Squalus carcharias.</i> Sq. dorso
plano dentibus serratis. <i>Lin.</i>
<i>Syst.</i> 400. <i>Gm. Lin.</i> 1498. |
| Καρχαρίας Κων. <i>Athen. Lib.</i>
vii. p. 310. | <i>Arted. Synon.</i> 89. <i>Gronov.</i>
<i>Zooph.</i> No. 143. |
| Lamia? <i>Plinii, Lib.</i> ix. c. 24. | La Lamie. <i>Bloch ichth.</i> iv.
31. tab. 119. |
| Le chien carcharien ou Perlz
fisch de Norvege. <i>Belon,</i>
52, 87. | Le Squale requin. <i>De la</i>
<i>Cepede Hist. des Poissons.</i>
i. 169. tab. 8. fig. 1. 2. |
| Lamia. <i>Tiburo. Rondel.</i> 489.
390. | |
| Canis Carcharias. <i>Gesner pisc.</i>
173. | |

THIS grows to a very great bulk, *Gillius* says, to the weight of four thousand pounds;

and asserts that in the belly of one was found a human corpse entire, which is far from incredible, considering their vast greediness after human flesh.

They are the dread of the sailors in all hot climates, where they constantly attend the ships in expectation of what may drop overboard; a man that has that misfortune inevitably perishes: they have been seen to dart at him, like gudgeons to a worm. A master of a *Guinea* ship informed me, that a rage of suicide prevailed among his new-bought slaves, from a notion the unhappy creatures had, that after death they should be restored again to their families, friends, and country. To convince them at lest that they should not re-animate their bodies, he ordered one of their corpses to be tied by the heels to a rope, and lowered into the sea, and though it was drawn up again as fast as the united force of the crew could be exerted, yet in that short space of time the sharks had devoured every part but the feet, which were secured at the end of the cord. Swimmers very often perish by them; sometimes they lose an arm or leg, and sometimes are bit quite asunder, serving but for two morsels for this ravenous animal: a melancholy tale of this kind is related in a *West India* ballad, preserved

in Doctor *Percy's* Reliques of ancient *English* Poetry.*

The mouth of this fish is furnished with (sometimes) a sixfold row of teeth, flat, triangular, exceedingly sharp at their edges, and finely serrated. We have one that is rather more than an inch and a half long. *Grew*† says, that those in the jaws of a shark two yards in length, are not half an inch, so that the fish to which mine belonged must have been six yards long, provided the teeth and body keep pace in their growth.‡ This dreadful apparatus, when the fish is in a state of repose, lies quite flat in the mouth, but when he seizes his prey, he has the power of erecting the teeth, by the help of a set of muscles that join them to the jaw. The mouth is placed far beneath, for which reason these, as well as the rest of the kind, are said to be obliged to turn on their backs to seize their prey, which is an observation as antient as the days of *Pliny*.§ The eyes are large: the back broad, flat, and shorter than that of other sharks; the tail is of a semilunar form, but the upper part is longer than the lower. It has vast

DESCRIP-
TION.

* Vol. I. 331. † *Rarities*, 91.

‡ Fossil teeth of this fish are very frequent in *Malta*, some of which are four inches long.

§ *Omnia autem carnivora sunt talia et supina vescantur. Lib. IX. c. 24.*

strength in the tail, and can strike with great force, so that the sailors instantly cut it off with an axe as soon as they draw one on board; the pectoral fins are very large, which enables it to swim with great swiftness; the body and fins are of a light ash-color.

The antients were acquainted with this fish; and *Oppian* gives a long and entertaining account of its capture. Their flesh is sometimes eaten, but is esteemed both coarse and rank.

Unfortunately for mankind, this species is almost universal in both the southern and northern hemispheres. It frequents the seas of *Greenland*, feeds on holibuts and the greater fish, on seals and young porpesses, and will even attack the little skin-boats of the *Greenlanders*, and bite the person whose lower parts are lodged in it, in two. Its only enemy is the blunt-headed cachalot or *Spermaceti* whale, at sight of which it will even fling itself out of the water on the rocks, and there perish.*

* See that admirable book the *Fauna Groenlandica* of the Reverend OTTO FABRICIUS, printed at *Copenhagen* in 1780.

Γλαυκος. <i>Ælian. an. Lib. I.</i>	<i>Squalus glaucus. Lin. syst.</i>	5. BLUE.
c. 16.	401. <i>Gm. Lin.</i> 1496.	
<i>Galeus glaucus. Rondel. 378.</i>	<i>Le Cagnot bleu. Bloch ichth.</i>	
<i>Gesner pisc. 609.</i>	iii. 71. <i>tab.</i> 86.	
<i>Blew shark. Wil. Ichth. 49.</i>	<i>Le Squale glauque. De la Ce-</i>	
<i>Raii Syn. pisc. 20.</i>	<i>pede Hist. des Poissons. i.</i>	
<i>Squalus fossula triangulari in</i>	<i>213. tab. 9. fig. 1.</i>	
<i>extremo dorso, foraminibus</i>		
<i>nullis ad oculos. Arted. syn.</i>		
98.		

ÆLIAN relates strange things of the affection this species bears to its young; among others, he says, that it will permit the small brood, when in danger, to swim down its mouth, and take shelter in its belly. This fact has been since confirmed by the observation of one of our best ichthyologists,* and is no more incredible, than that the young of the *Opossum* should seek an asylum in the ventral pouch of its parent, a fact too well known to be contested. But this degree of care is not peculiar to the blue shark; it is we believe common to the whole genus.

This species frequents many of our coasts, but particularly those of *Cornwall* during the pilchard season, and is at that time taken with great iron hooks made on purpose.

* *Rondeletius*, 388.

DESCRIP-
TION.

It grows to the length of six or seven feet. The color of the head, back, and sides is a rich deep blue; the belly white; the nose sharp, yet rounded at the end; the teeth which are sharp, broad, and serrated, are often found fossil, and in that state are called, *Glossopetræ*. It wants the orifices behind the eyes usual to the genus. The pectoral and first dorsal fins are large and sharply pointed on their lower part; between the second dorsal fin and the tail is a triangular dent. The tail is bifid, the upper part very long, and a little incurvated. The skin is much smoother than that of other sharks.

RONDELETIUS says, that he was an eye-witness to its fondness for human flesh, and that he saw a boy, who was walking in the sea close to the shore, attacked and nearly caught by this ravenous fish.

This species is found in the *South Seas*, and in the *West Indies*.

The public is indebted to Doctor *Watson* junior, for enabling me to give a better account of this fish than I was capable of doing in my former edition.*

* The Second Edition. Ed.

LONG TAILED SILARK.



J. Parkinson del.

<i>Αλωπεξ?</i> <i>Arist. Hist. an. Lib.</i>	<i>Squalus cauda longiore quam</i>	6. LONG-TAILED.
ix. c. 37. <i>Ælian Var. Hist.</i>	<i>ipsum corpus. Arted. syn.</i>	
<i>Lib. i. c. 5.</i>	96.	
<i>Oppian Halieut. i. 381. iii.</i>	<i>Squalus Vulpes. Sq. caudæ</i>	
144.	<i>lobo superiore longitudine</i>	
<i>Vulpes Plinii Lib. ix. c. 43.</i>	<i>corporis. Gm. Lin. 1496.</i>	
<i>Singe de mer. Belon, 88.</i>	<i>Sea Fox. Thresher. Borlase</i>	
<i>Vulpes marina. Rondel. 337.</i>	<i>Cornwall. 265.</i>	
<i>Gesner pisc. 1045.</i>	<i>Le Squale Renard. De la Ce-</i>	
<i>Cercus Caii opusc. 110.</i>	<i>pede Hist. des Poissons. i.</i>	
<i>Sea Fox, or Ape. Wil. Ichth.</i>	267.	
54. <i>Raii syn. pisc. 20.</i>		

THIS fish is most remarkable for the great length of the tail; the whole measure of that we had an opportunity of examining, was thirteen feet, of which the tail alone was more than six, the upper lobe extending greatly beyond the lower, almost in a strait line. The body was round and short; the nose short but sharp pointed; the eyes large, and placed immediately over the corners of the mouth, which was small, and not very distant from the end of the nose; the teeth triangular, small for the size of the fish, and placed in three rows; the back ash color; the belly white; the skin universally smooth.

The antients styled this fish *Αλωπεξ*, and *Vulpes*, from its supposed cunning. They be-

lieved, that when it had the misfortune to have taken a bait, it swallowed the hook till it got at the cord, which it bit off, and so escaped.

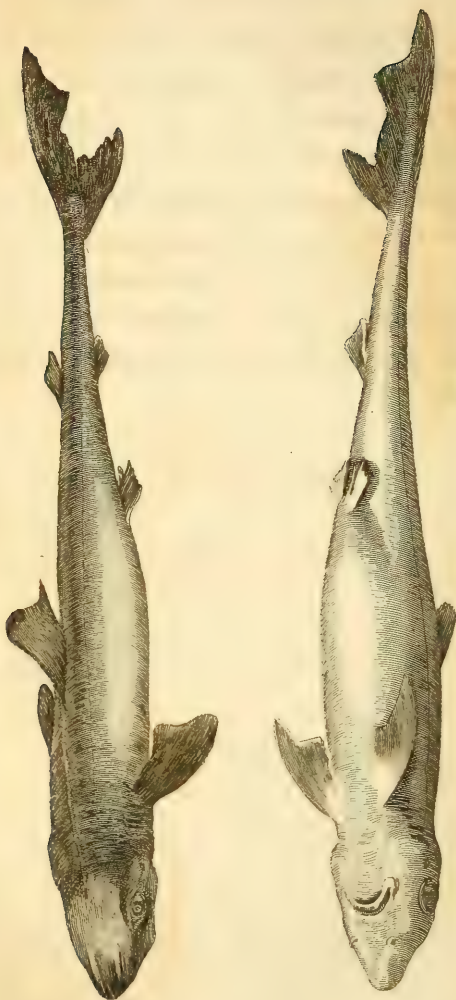
They are sometimes taken in our seas, and have been imagined to be the fish called the *Thresher*, from its attacking and beating the Grampus with its long tail, whenever that species of whale rises to the surface to breath.

7. TOPE. *Kuwy?* *Arist. Hist. an. Lib.* foraminibus exiguis ad oculos. *Arted. synonym.* 97.
 vi. c. 11.
Canicula? *Plinii Lib.* ix. c. *Squalus Galeus. Lin. syst.*
 46. *399. Gm. Lin.* 1492.
Canis galeus. Rondel. 377. *Le Milandre. Bloch ichth.* iv.
 Gesner pisc. 167. *29. tab.* 118.
The Tope. Wil. Ichth. 51. *Le Squale Melandre. De la*
 Raii syn. pisc. 20. *Cepede Hist. des Poissons.*
Squalus naribus ori vicinis; *i.* 237.

DESCRIP-
TION.

ONE that was taken on the *Flintshire* coast weighed twenty-seven pounds, and its length was five feet; but they sometimes grow to a greater size, some, according to *Artedius*, weighing an hundred pounds. The color of the upper part of the body and fins was a light cinereous; the belly white; the nose was very long, flat, and sharp pointed, beyond the nostrils semitransparent; the nostrils were placed

TOPE SHARK.



very near the mouth; behind each eye was a small orifice; the teeth numerous, disposed in three rows, small, very sharp, triangular, and serrated on their inner edge. The first back fin was placed about eighteen inches from the head; the other very near the tail; the tail finned beneath, the upper part ended in a sharp angle.

This species is said by *Rondeletius* to be very fierce and voracious, even to pursue its prey to the edge of the shore. Its skin and flesh have an offensive rank smell; therefore we suppose Mr. *Dale* gave it ironically the title of *Sweet William*.*

* *Hist. Harwich*, 420.

8. SPOTTED. Νεξρίας, Σκύλιος, Αστέριας? *Arist. Hist. an. Lib. v. c. 10: vi. c. 10, 11.* ani medio inter anum et caudam pinnatum. *Arted. syn. 97.*
- Πωκίλος? *Oppian Halieut. i. 381.* Squalus Canicula. *Lin. syst. 399. Gm. Lin. 1490.*
- La Roussette commune. *Belon, 65. Gronov. Zooph. No. 145.* Greater Cat fish. *Edw. 289.*
- Canicula *Aristotelis. Rondel. 380. Gesner pisc. 168.* La Roussette tigrée. *Bloch ichth. iv. 13. tab. 112.*
- Catulus major vulgaris. *Wil. Ichth. 62.* Le Squale Roussette. *De la Cépède Hist. des Poissons. i. 221. tab. 9. fig. 2. (la femelle.)*
- Greater Cat Fish: the Bounce. *Raii syn. pisc. 22,*
- Squalus ex rufo varius, pinna

THIS species being remarkably spotted, may be the same known to the antients by the names expressed in the synonyms; but they frequently leave such slight notices of the animals they mention, that we are obliged to add a doubtful mark (?) to numbers of them.

DESCRIP-
TION.

The weight of one we took was six pounds three ounces, and yet it measured three feet eight inches in length; so light are the cartilaginous fish in respect to their size. The nose was short, and very blunt, not extending above an inch and an half beyond the mouth; the nostrils were large, placed near the mouth, and covered with a large angular flap; the head very

LESSER SPOTTED SHARK. (P. 160.)



SPOTTED SHARK.



... to the inside of the mouth ...
... and the ...
... and the ...
... and the ...

The color of the ...
... and the ...
... with numerous large distinct ...
... the skin were ...
... The whole ...

strong ...
... on each ...
... and ...
... of the ...
... very much ...

...
...
...
...
... and the birds of prey ...
...
... believe that they breed at all times of ...
... as they scarcely ever take any but ...

flat ; the eyes were oblong ; behind each a large orifice opened to the inside of the mouth ; the teeth small, sharp, smooth at their sides, strait, and disposed in four rows ; both the back fins were placed much behind, and nearer the tail than is common ; the tail was finned, and below extended into a sharp angle. The color of the whole upper part of the body, and the fins, was brown, marked with numerous large distinct black spots : some parts of the skin were tinged with red ; the belly was white. The whole was most remarkably round, and had a strong smell.

The tendrils that issue from each end of the purse * of this fish, are much more delicate and slender than those of the other, are as fine as *Indian* grass, and very much resemble it.

The female of this species, and we believe of other sharks, is greatly superior in size to the male ; so that in this respect there is an agreement between the fish and the birds of prey. † They bring about nineteen young at a time : the fishermen believe that they breed at all times of the year, as they scarcely ever take any but what are with young.

* This is figured in Doctor *Shaw's* General Zoology, v. 335. tab. 152. ED.

† Vide *British Zoology*, Vol. I. 216.

To this kind may be added, as a mere variety, the

Catulus maximus. *Wil. Ichth.* 63. *Raii syn. pisc.* 22.

Squalus cinereus, pinnis ventralibus discretis. *Arted. syn.* 97.

Squalus stellaris. *Lin. syst.* 399.

No. 145. *Gronov. Zooph.*

Le Squale Rochier. *De la Cepede Hist. des Poissons.* i. 233. *tab.* 10. *fig.* 1.

the chief difference seeming to be in the color and the size of the spots; the former being grey, the latter fewer but larger than in the other.

§. LESSER
SPOTTED.

Le muscarol ? Belon, 64.

Catulus minor. *Wil. Ichth.* 64.

id. C. major. 62.

Lesser Rough Hound, or Mor-
gay. *Raii syn. pisc.* 22.

Squalus dorso vario, pinnis
ventralibus concretis. *Arted.*
synon. 97.

Squalus Catulus. *Lin. syst.*
400. *Gm. Lin.* 1490.

Gronov. Zooph. No. 144.

La Roussette. *Bloch ichth.* iv.
19. *tab.* 114.

Le Squale Roussette. *De la*
Cepede Hist. des Poissons.
i. 221. (*le male.*)

DESCRIP-
TION.

THE weight of one that was brought to us by a fisherman was only one pound twelve ounces; the length two feet two inches; it was of a slender make in all parts; the head was flat; the nostrils covered with a long flap; the nose blunt, and marked beneath with numerous small punctures; behind each eye was a small orifice. The back fins, like those of the former, placed

far behind ; the ventral fins united, forming as if it were but one, which is a sure mark of this species ; the tail finned like that of the greater dog fish. The color cinereous, streaked in some parts with red, and generally marked with numbers of small black spots ; but we have observed in some that they are very faint and obscure ; the belly white.

This species breeds from nine to thirteen young at a time, is very numerous on some of our coasts, and very injurious to the fisheries. Both these spotted species are most tenacious of life.

Γαλεος λεῖος? <i>Arist. Hist. an.</i>	<i>Squalus dentibus obtusis seu</i>	10. SMOOTH.
<i>Lib. vi. c. 10. Oppian,</i>	<i>granulosis. Arted. Syn. 93.</i>	
<i>Lib. i. 380.</i>	<i>Squalus Mustelus. Lin. syst.</i>	
<i>Galeus lævis. Rondel. 375.</i>	<i>400. Gm. Lin. 1492. Gro-</i>	
<i>Gesner pisc. 608.</i>	<i>nov. Zooph. No. 142.</i>	
<i>Mustelus lævis primus. Wil.</i>	<i>Le squalé emissole. De la</i>	
<i>Ichth. 60.</i>	<i>Cepede Hist. des Poissons.</i>	
<i>Smooth or unprickly hound.</i>	<i>i. 242.</i>	
<i>Raii Syn. pisc. 22.</i>		

THIS species is called smooth, not that the skin is really so, but because it wants the spines on the back, which are the character of the second species, the Picked Shark.

The nose extends far beyond the mouth; the

DESCRIP-
TION.

end is blunt; the holes behind the eyes are small; the back is less flat than that of others of this genus; the first back fin is placed midway above the pectoral and ventral fins; the pectoral fins are small; the tail forked, but the upper part is much the longest; the teeth resemble those of a Ray, rough and sharp. The color of the back and sides ash, and free from spots; the belly silvery.

11. PORBEAGLE. *Squalus cornubiensis*. Sq. plica longitudinali ad utrumque caudæ latus. *Gm. Lin.* 1497. *Goodenough in Lin. Tr.* iii. 80. *tab.* 15.
 The Porbeagle. *Borlase Cornwall*, 265. *Tab.* 26. *Shaw Gen. Zool.* v. part ii. p. 349. *Le Squalo long-nez. De la Cepede Hist. des Poissons.* i. 216. *tab.* 2. *fig.* 3.?

THE figure of this fish, engraved after a drawing by the Rev. Mr. *Jago*,* is preserved in Doctor *Borlase's* Natural History of *Cornwall*. As it is not attended with any account farther

* This gentleman was minister of *Loo*, in *Cornwall*, and appears to have been well acquainted with the History of Fishes. He communicated figures of several of the *Cornish* fishes, with a brief account of each, to *Petiver*, at whose instance, as Doctor *Derham* tells us, in the preface to Mr. *Ray's* Itineraries, p. 69, he added them to the *Synopsis avium et piscium*, p. 162. A few others of his drawings are also preserved in the Natural History of *Cornwall*, and seem to be executed with skill and accuracy.

than that it is a *Cornish* fish, and a small species of shark, we in our former edition were obliged to form the best description we could from the print.

In 1793 I had an opportunity at *Brighthelmstone*, of examining a recent specimen. Its length was three feet nine inches; the girth in the thickest part two feet one inch. The nose very long, slender towards the end, sharp pointed, and punctured beneath; the teeth long and slender, with a small process on each side; three rows in the upper jaw, the same on the sides of the lower, but only two rows in the front of the latter; the body very thick and deep, but extremely slender and flatted just on the setting on of the tail. The sides near that part distended and sloping, thinning to an edge. The first back fin placed almost in the middle, the other pretty near the tail; the belly very deep; the ventral and anal fins small; the tail bifurcated; the upper fork a little longer than the lower; adjoining to it was a transverse dent above and below: the color of the whole upper part, the sides, fins and tail, dusky, tinged obscurely with green and blue; beneath, from the tip of the nose, and also part of the sides, were entirely white.

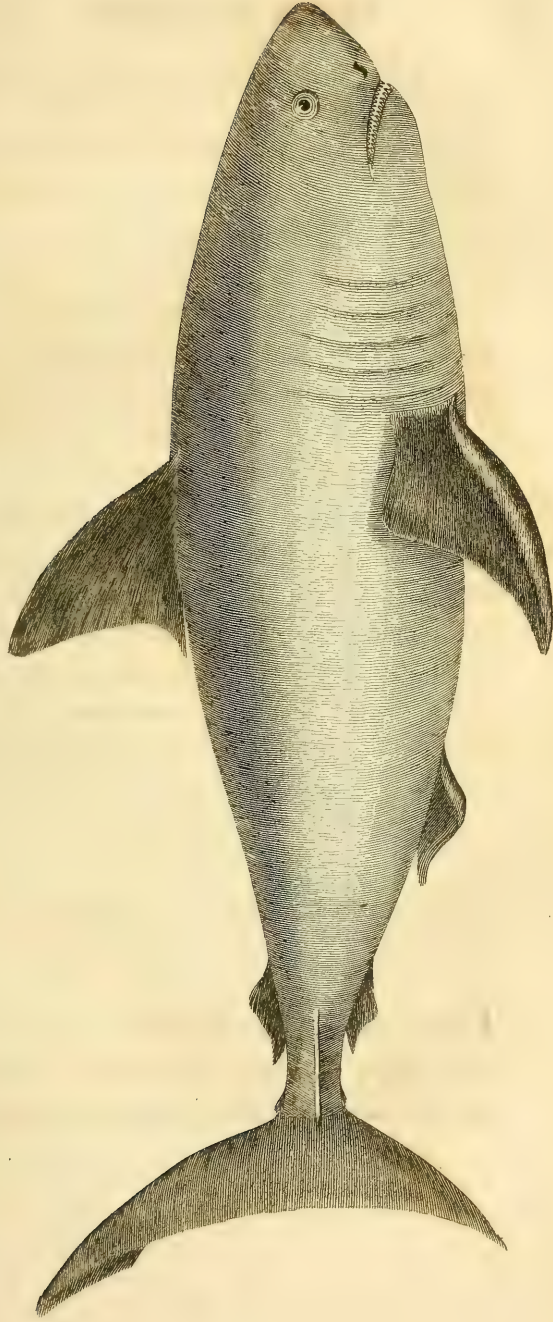
DESCRIP-
TION.

[The Porbeagle Shark, so well described by Doctor *Goodenough*, Bishop of *Carlisle*, in the third volume of the *Linnæan* Transactions, differed only in some trifling circumstances from the above. Its color was of a deep blue; the punctures extended from the nose to the nostrils; in the mouth were only two rows of teeth, in the upper jaw, except in the front, where the two middle ones stood single; in the under jaw were also two rows, except in the front, where the two middle teeth had a triple row. As the number of teeth, however, seems to depend upon age, no specific distinction can be drawn from them. The subject described by the learned Prelate measured three feet ten inches from the tip of the nose to the extremity of the tail; he was informed that they sometimes grow to the length of eight feet, and when of a large size have a triple row of teeth. ED.

2. BEAU-
MARIS. *Br. Zool.* ed. 1776. iii. p. 128. *Squalus Monensis. Shaw, Gen. Zool.* v. part ii. 350.
pl. 17.

THIS species was observed by my friend the Rev. *Hugh Davies* of *Beaumaris*, who favored me with the description, and an accurate draw-

BEAUMARIS SHARK.



ing* made from the fish taken in a neighboring wear.

The length was seven feet; the snout and body of a cylindrical form; the greatest circumference four feet eight inches; the nose blunt; the nostrils small; the mouth armed with three rows of slender teeth,† flatted on each side, very sharp, and furnished at the base with two sharp processes; the teeth are fixed to the jaws by certain muscles, and are liable to be raised or depressed at pleasure. The first dorsal fin was two feet eight inches distant from the snout, of a triangular form; the second very small, and placed near the tail; the pectoral fins strong and large; the ventral and anal small; the space between the second dorsal fin and the tail much depressed, the sides forming an acute angle; above and below was a transverse fossule or dent. The tail was in the form of a crescent, but the horns of unequal lengths; the upper, one foot ten inches; the lower, one foot one inch.‡ The whole fish

DESCRIP-
TION.

* This drawing is now in the possession of the Editor, and corresponds exactly with the original plate, notwithstanding the unqualified assertion made by a recent writer, of its "having been injudiciously altered, to the fancy of the artist or the engraver." ED.

† These teeth are often found fossil, and are styled by *Lluyd*, *Ornithoglossum*, from their resemblance to a bird's tongue.

‡ Doctor *Shaw* in his valuable work on General Zoology, vol.

was of a lead color. The skin comparatively smooth, being far less rough than that of the lesser species of this genus.

[In the third volume of the late edition of Mr. *Pennant's Tour in Wales*, the Reverend *Hugh Davies* has favored the public with some farther observations, on the *Beaumaris* Shark, and a comparative outline is given of that species, and of the Porbeagle Shark. The Editor is happy to have it in his power to subjoin the following letter which he recently received from that able naturalist:

“ Dear Sir,

“ Since I communicated some observations
 “ on the *Beaumaris* Shark, to the editor of Mr.
 “ *Pennant's Tour in Wales*, I am enabled to add
 “ a few more; a fish of that species, having a
 “ few days ago (on the 9th of *June* 1811) strand-
 “ ed near *Bangor* ferry, on the *Anglesey* side
 “ the *Menai*, which gives it an additional claim
 “ to the trivial name which it bears in Doctor
 “ *Shaw's General Zoology*, *Monensis*.

“ This fish was nine feet six inches in length,
 “ that is, two feet and an half longer than that

v. p. 351, falls into a singular error. He observes in a note,
 “ In the *British Zoology*, the upper lobe is said to be ten, and
 the lower thirteen inches long,” omitting “ one foot,” which
 precedes the “ ten inches.” ED.

“ which I had formerly seen and made a drawing of; but each part of this bore an exact proportion to the corresponding parts of the other, except that the nose of this, although above one third a larger animal than the former, was smaller in every respect, being more abruptly tapering, but blunt and shorter, as it measured but four inches and eight tenths from the eye to the end, whereas the snout of that smaller fish was six inches in length from the end to the eye. This was a vast animal; its general circumference seemed greater in proportion to its length, than that of the former, but it was particularly so at the region of the abdomen. This is readily accounted for, when we say, that it was a female, and had in its belly four young ones, each about eight-and-twenty or thirty inches long.* Seventeen quarts of oil were obtained from the liver. As it is supposed, with reason, that in this tribe of ferocious animals, the female is invariably the larger, I am induced to conclude, that the specimen which I observed

* In the description of the Porbeagle Shark, in the Memoirs of the *Wernerian Society*, p. 150, it is stated, that “ No fewer than thirty young ones appeared in the belly of this female, fully formed, and apparently ready for exclusion,” whereas four only were found in the female of this species. H. D.

“ near forty years ago, might have been a full
“ grown male, and that the difference between
“ the two sexes is inferiority of size with regard
“ to the male, but with a front in every respect
“ larger than that of the female.

“ I am, &c. &c.

“ HUGH DAVIES.”

Beaumaris, June 18, 1811.

GENUS *X. CHIMÆRA.

HEAD pointed on the upper part.

MOUTH placed beneath.

LIP upper, five cleft.

TEETH cutting, two in front in each jaw.

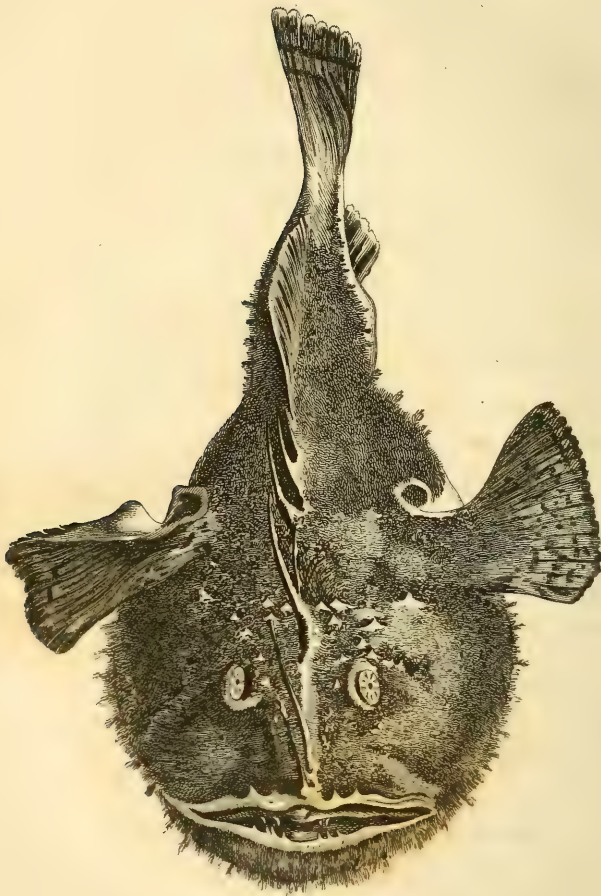
Centrina prima. <i>Aldrov. de</i>	<i>Art. gén. 68.</i>	1. NORTH- ERN.
<i>Pisc. 462.</i>	<i>La Chimere. Bloch Ichth. iii.</i>	
Galeus Acanthias. <i>Wil. Ichth.</i>	<i>69. tab. 124.</i>	
<i>75. t. B. g. f. g.</i>	<i>De la Cepede Hist. des Pois-</i>	
<i>Raii Syn. Pisc. 23.</i>	<i>sons. i. 392.</i>	
Chimæra monstrosa. <i>Gm. Lin.</i>	<i>Arct. Zool. Int. xxxix.</i>	
1488.		

[THIS strange and mishapen fish is a native of the Northern ocean, and inhabits the deepest waters. A drawing of a specimen taken off the *Schetland* isles, was communicated to Mr. *Pennant* by the late *George Paton*, of *Edinburgh*.

It grows to the length of two feet and an half and even four feet. The head blunt, and rounded beneath; the mouth small; the eyes, which shine like those of a cat, have a sea-green pupil, surrounded with a white iris; the first dorsal fin is of a triangular shape, with an

DESCRIP-
TION.

extremely strong and sharp spine in front of it; the second and third shallow, the last extends to the tail, which is filiform and of the same length as the rest of the body; the body rather compressed diminishes rapidly from the anterior part; the pectoral fins are of a disproportionate size; the ventral rather smaller; the lateral line white, and strongly defined with a brown edge. The *Norwegians* give this fish the name of gold or silver fish, from the resplendent color which forms the ground of the body, and which is set off by the dark spots above and below the lateral line; the fins are of a deep brown; it is also called by them *sea rat*, from the form of the tail, and *king fish*, from a filament terminating in a tuft, which is found on the head of the male. They obtain an oil from the liver by filtration, which is esteemed useful in complaints of the eyes, and is also applied to wounds. ED.



COMMON ANGLER.

GENUS X. ANGLER.

APERTURE, one behind each ventral fin.

HEAD and body large, flat, and circular.

TEETH numerous and small in the jaws, roof of the mouth, and on the tongue.

FINS pectoral, broad and thick.

Batrachos. *Arist. Hist. an.*
Lib. iv. c. 37. *Oppian Ha-*
lieut. ii. 86.

Rana piscatrix. *Ovid. Ha-*
lieut. 126. *Plinii Lib.* ix.
c. 24.

La Grenouille de mer, ou
pescheuse. Le Diable de
mer, Bauldroy & Pesche-
teau. *Belon*, 77.

Rana piscatrix. *Rondel.* 363.
Gesner pisc. 813.

Seheganss, seheteuffel, sehe-
tode. *Schonevelde*, 59.

Toad-fish, Frog-fish, or Sea-

Devil. *Wil. Ichth.* 85. *Raii* 1. COMMON.
Syn. pisc. 29.

Lophius ore cirroso. *Arted.*
Syn. 87.

Lophhius piscatorius. *Lin.*
Syst. 402. *Gm. Lin.* 1479.

L. p. depressus capite rotun-
dato. *Faun. Suec.* No. 298.
Gronov. Zooph. No. 207.

Le Diable de Mer. *Bloch*
ichth. iii. 74. *tab.* 87.

La Lophie bardroie. *De la*
Cepede Hist. des Poissons.
i. 304. *tab.* 15. *fig.* 1.

THIS singular fish was known to the antients by the name of *Batrachos*, and *Rana*, and to us by that of the Fishing frog, for it is of a figure

resembling that animal in a tadpole state. *Pliny* takes notice of the artifice used by it to take its prey: *Eminentia sub oculis cornicula turbato limo exerit, assultantes pisciculos attrahens, donec tam prope accedant, ut assiliat.* “ It puts forth the slender horns it has beneath its eyes, enticing, by that means, the little fish to play round, till they come within reach, when it springs on them.”*

DESCRIP-
TION.

The fishing frog grows to a large size, some being between four and five feet in length; and we have heard of one taken near *Scarborough*, whose mouth was a yard wide. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the dog fish,† and whenever they take it with their lines set it at liberty.

It is of very great deformity; the head is much bigger than the whole body, round at the circumference, and flat above; the mouth of a prodigious wideness; the under jaw is much

* *Cicero*, in his second book *De Natura Deorum*, gives much the same account of this fish: *Ranæ autem marinæ dicuntur obtruere sese arena solere, et moveri propè aquam, ad quas, quasi ad escam, pisces cum accesserint, confici a ranis, atque consumi.*

† The bodies of these fierce and voracious fish are often found in its stomach.

longer than the upper; the jaws are full of slender sharp teeth; in the roof of the mouth are two or three rows of the same; at the root of the tongue, opposite each other, are two bones of an elliptical form, thick set, with very strong sharp teeth; the nostrils do not appear externally, but in the upper part of the mouth are two large orifices which serve instead of them; on each side of the upper jaw are two sharp spines, and others are scattered about the upper part of the head. Immediately above the nose are two long tough filaments, and on the back three others, united by a web, and forming the first dorsal fin; these are what *Pliny* calls *cornicula*, and says it makes use of to attract the little fish; the longest and foremost of these filaments is furnished with a bifurcated thin appendage, which they may easily enough mistake for a bait. They seem to me like lines flung out for that end: I therefore have changed the old name of FISHING FROG for the more simple one of ANGLER. Along the edges of the head and body are a multitude of short fringed skins, placed at equal distances; the ventral fins are stout, broad, thick, and fleshy, and withinside divided into fingers. The aperture to the gills is placed behind the

pectoral fins, each of these is very wide, so that some writers have imagined it to be a receptacle for the young in time of danger. In a specimen I saw at *Brighthelmstone*, which was four feet long and weighed fifty pounds, the receptacle or sack was fourteen inches deep; the aperture or spiracle is at the bottom of it, and opens into the mouth. The second dorsal fin is placed very low near the beginning of the tail; the anal fin is placed beneath, almost opposite the former; the body grows slender near the tail, the end of which is quite even. The color of the upper part of this fish is dusky, the lower part white: the skin smooth.

2. LONG. Fishing Frog of Mount's-Bay. 27. *fig. 6. Phil. Trans. Vol.*
Borlase Cornwall, 266. tab. liii. 170.

THIS is a species at present unknown to us, except by description.

DESCRIP-
TION.

It is, says Doctor *Borlase*, of a longer form than the common kind; the head more bony, rough, and aculeated. It had no finlike appendages round the head, but on each side the thinner part of the body, beginning beneath the dorsal fin, and reaching within two inches

of the tail, was a series of them, each three quarters of an inch in length; at the end of the pectoral fins were spines an inch and three quarters in length; at the end of the tail, others three quarters of an inch long.

GENUS XI. STURGEON.

APERTURE one narrow on each side.

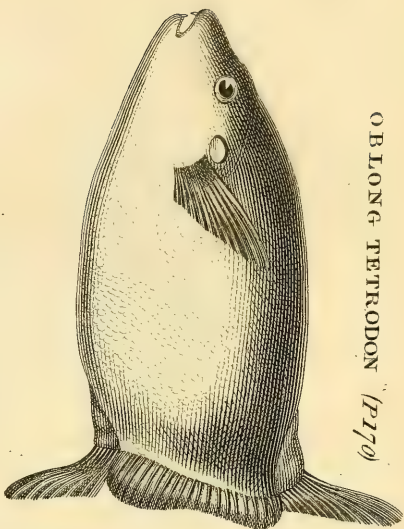
MOUTH placed far below, tubular and without teeth.

BODY long, and often angular.

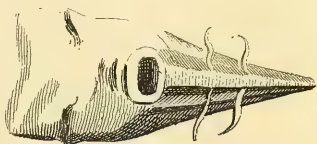
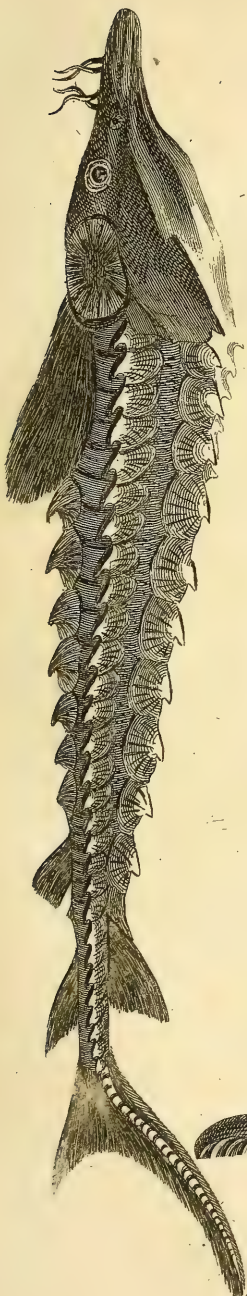
- | | |
|---|--|
| 1. COMMON. Ονισκος. <i>Athen. Lib.</i> viii. 315. | Acipenser Sturio. <i>Lin. Syst.</i> |
| Ἀκκισπησιος? <i>Athen. p.</i> 294. | 403. <i>Gm. Lin.</i> 1483. <i>Mus.</i> |
| Acipenser? <i>Plinii Lib.</i> ix. c. | <i>Ad. Fred.</i> 54. <i>tab.</i> 18. <i>fig.</i> |
| 17. <i>Ovidii Halieut.</i> ? | 2. |
| L'Esturgeon. <i>Belon</i> , 89. | <i>Stor. Faun. Suec.</i> No. 299. |
| Acipenser. <i>Rondel.</i> 410. <i>Ges-</i> | <i>Seb. Mus.</i> iii. 101. <i>tab.</i> 29. |
| <i>ner pisc.</i> 2. | No. 19. |
| Sturio. <i>Gesner pisc.</i> | L'Esturgeon. <i>Bloch ichth.</i> iii. |
| Stoer. <i>Schonevelde</i> , 9. | 80. <i>tab.</i> 88. |
| Sturgeon. <i>Wil. Ichth.</i> 239. | L'Acipensere esturgeon. <i>De</i> |
| <i>Raii Syn. pisc.</i> 112. | <i>la Cepede Hist. des Pois-</i> |
| Schirk. <i>Kram.</i> 383. | <i>sons</i> , i. 411. <i>tab.</i> 20. <i>fig.</i> 1. |
| Acipenser corpore tuberculis | <i>Arct. Zool.</i> ii. 356. |
| spinosus exasperato. <i>Arted.</i> | |
| <i>Syn.</i> 91. | |

THAT this is the Ονισκος of *Dorion*, as quoted by *Athenæus*, is very probable, as well from the account he gives of its form, as of its nature. He says its mouth is always open, in which it agrees with the Sturgeon, and that it conceals

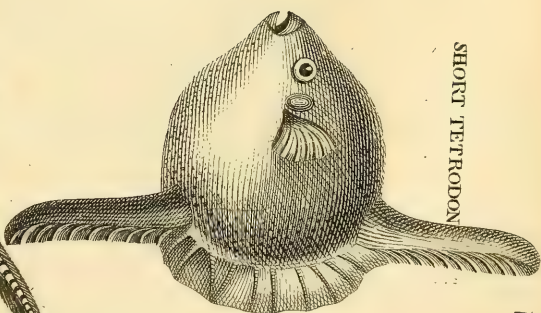
OBLONG TETRODON (P170)



STURGEON. (P 164)



SHORT TETRODON



Vol. 3. Pl. 164.
(P172)

itself in the hot months: this shews it to be a fish of a cold nature, which is confirmed by the history of the *European* fish of this species, given by Mr. *Forster*,* in his Essay on the *Volga*, who relates that they are scarcely ever found in that river in spring or summer, but in vast quantities in autumn and winter, when they crowd from the sea under the ice, and are then taken in great numbers.

Whether the *acipenser* is the sturgeon of the moderns, may be doubted, otherwise *Ovid* would never have spoke of it as a foreign fish:

Tuque peregrinis, Acipenser, nobilis undis.

And thou, a fish in foreign seas renowned.

it being well known that it is not uncommon in the *Mediterranean*, and even in the mouth of the *Tiber*, at certain seasons; but this passage leaves us as much in the dark as to the particular species intended by the word *acipenser*, as the description *Pliny* has given us; for that philosopher relates, that its scales are placed in a contrary direction to those of other fish, being turned towards the mouth, which disagrees with the character of all that are known at present. Whatever fish it might have been, it was certainly the same with the *Elops*, or *Helops*, as

* *Phil. Trans.* lvii. 352.

appears from *Pliny*, who makes it synonymous with the *acipenser*,* and from another line of the poet beforementioned :

Et pretiosus Helops nostris incognitus undis.

The pretious *Helops* stranger to our seas.

MIGRATORY. The sturgeon annually ascends our rivers, but in no great numbers, and is taken by accident in the salmon nets. It seems a spiritless fish, making no manner of resistance when entangled, but is drawn out of the water like a lifeless lump. It is seldom taken far out at sea, but frequents such parts as are not remote from the æstuaries of great rivers. It is admired for the delicacy and firmness of its flesh, which is as white as veal, and extremely good, when roasted. It is generally pickled. Most we receive come either from the *Baltic* rivers, or from *North America*: those cured at *Pillau* have been in the greatest repute, but through the encouragement given by the society instituted for promoting trade and manufactures, the sturgeon from our colonies begins to rival those of the *Baltic*.

Great numbers are taken during summer in the lakes *Frischehaff*, and *Curisch-haff* near *Pillau*, in large nets made of small cord. The

* Quidam eum *Elopem* vocant. *Lib. ix. c. 17.*

adjacent shores are formed into districts, and farmed out to companies of fishermen, some of which are rented for six thousand guilders, or near three hundred pounds *per annum*.

Sturgeons are found in vast abundance in the *American* rivers in *May*, *June*, and *July*, particularly in those of *Virginia*, where they are in such multitudes, that six hundred have been taken in two days, with no more trouble than putting down a pole with a hook at the end, to the bottom, and drawing it up again, on perceiving that it rubbed against a fish.*

Caviare is made of the roes of this, and also of all the other sorts of sturgeons, dried, salted, and packed up close. The best is said to be made of those of the *Sterlet*,† a small species frequent in the *Yaik* and *Volga*. *Ichthyocolla*,‡ or ising-glass, is also made of the sound of our fish, as well as that of the others, but the *Beluga* affords the best.§

* Doctor *Burnaby's Travels*, p. 15.

† *Strahlenberg's Hist. Russia*, 337. *Accipenser Ruthenus*. *Gm. Lin.* 1485.

‡ *Phil. Trans.* lvii. 354. A very small quantity is made from this species, and that only designed as presents to great men, as Mr. *Forster* assured me.

§ The antients were acquainted with the fish that afforded this substance. *Pliny lib.* xxxii. c. 7. mentions it under the name of *Ichthyocolla*, and says, that the glue that was produced from it had the same title; and afterwards adds, that it was made out of

DESCRIP-
TION.

The sturgeon grows to a great size, to the length of eighteen feet, and to the weight of five hundred pounds, but it is seldom taken in our rivers of that bulk. The largest we have known caught in those of *Great Britain* weighed four hundred and sixty pounds, which was taken about two years ago in the *Esk*, where they are more frequently found than in our southern waters.

The nose is very long, slender, and ends in a point; the eyes are extremely small; the nostrils placed near them: on the lower part of the nose are four *cirri* or beards; the mouth is situated far beneath, is small, and unsupported by any jaw-bones; neither has it any teeth. The mouth of a dead fish is always open; when alive it can close or open it at pleasure, by means of certain muscles. The body is long, pentagonal, and covered with five rows of large bony tubercles; one row of which is placed on the back, and two on each side; the whole under side of the fish, from the end of the nose

the belly of the fish. The *Mario*, said by *Pliny lib. ix. c. 15.* to be found in the *Danube* and the *Borysthenes*, was certainly of this genus, a cartilaginous fish (*nullis ossibus spinisve intersitis*) resembling a small porpesse (*Porculo marino simillimus*;) and very probably may be the same with the *Beluga*, which, according to Mr. *Forster, Phil. Trans. lvii. 354.* has a short blunt nose, agreeing in that respect with the porpesse.

to the vent, is flat; on the back, not remote from the tail, is a single fin; it has besides two pectoral fins, two ventral, and one anal fin; the tail is bifurcated, but the upper part much longer than the lower. The upper part of the body is of a dirty olive color; the lower part silvery; the middle of the tubercles white.

In the manner of breeding it is an exception among the cartilaginous fish, being like the bony fish oviparous, spawning in winter.

GENUS XII. TETRODON.

BODY very deep, and as if cut off in the middle.

MOUTh small.

TEETH, two only in each jaw.

1. OBLONG. Sun-Fish from Mount's Bay. *lique annexa, spiraculis lunatis. Retz. nov. act. Stockh. 6. 2. p. 116.*
Borlase Cornwall, 268. tab. 26. fig. 7.
- Ostracion lævis. *Gronov. Cephalus oblongus. C. corpore oblongo truncato. Shaw Zooph. No. 185. Gen. Zool. v. part ii. 439.*
- Tetrodon Mola truncatus. β . *Le Tetrodon Lune. De la Cépède Hist. des Poissons, i. 509. tab. 22. fig. 2.*
Gm. Lin. 1448.
- Tet. inermis, lævis, compressus, oblongus, cauda brevissima, pinna dorsali ana-

RONDELETIUS has given this genus the synonym of *Orthragoriscus*, as if it was that which *Pliny** intended by the same name; but the account left us by that naturalist is so brief, that we do not think ourselves authorized to place it as a synonymous creature. He says no more than that it was the greatest of fish, and that it grunted when it was first taken,

* *Lib. xxxii. c. 2.*

from which probably rose the name, for, according to *Athenæus*, ὀβθραγορσνος* was that given to a young pig. We are inclined to believe, that this fish had escaped the notice of *Pliny*, otherwise he must have unavoidably made some remark on its striking figure.

This fish grows to a great bulk: that which was examined by *Salvianus*† was above a hundred pounds in weight: and Doctor *Borlase* mentions another taken at *Plymouth* in 1734; that weighed five hundred.

In form it resembles a bream, or some deep fish cut off in the middle. The mouth is very small, and contains in each jaw two broad teeth, with sharp edges.

The eyes are little; before each is a small semilunar aperture; the pectoral fins very small, and placed behind them. The dorsal fin and the anal fin are high, and situated at the extremity of the body; the tail fin is narrow, and fills all the abrupt space between those two fins.

The color of the back is dusky, and dappled; the belly silvery; between the eyes and the pectoral fins are certain streaks pointing downwards. The skin is free from scales.

When boiled, it has been observed to turn

* *Lib.* iv. p. 140.

† *Hist. Pisc.* 155.

into a glutinous jelly, resembling boiled starch when cold, and served the purposes of glue, on being tried on paper and leather. The flesh of this fish is uncommonly rank: it feeds on shell-fish.

There seems to be no satisfactory reason for the old *English* name. Care must be taken not to confound it with the sun-fish of the *Irish*, which differs in all respects from this.

2. SHORT. *Orthorogoriscus sive Luna piscis. Rondel. 424.* *nalique annexa. Lin. Syst. 412. Gm. Lin. 1447. Gronov. Zooph. No. 186.*
- Mola Salviani, the Sun-fish. Wil. Ichth. 151. Raii Syn. Brunnich pisc. Massil. No. pisc. 51. 16.*
- Ostracion cathetoplateus subrotundus inermis asper, pinnis pectoralibus horizontalibus, foraminibus quatuor in capite. Arted. synonym. 83.* *Sun-fish, from Loo. Borlase Cornwall, 267. tab. 26. fig. 6.*
- Tetrodon Mola. T. lævis, compressus, cauda truncata, pinna brevissima dorsali a-* *La Lune. Bloch ichth. iv. 83. tab. 128.*
- Le Tetrodon Lune. β. De la Cepede Hist. des Poissons, i. 514.*

DESCRIP-
TION.

THIS differs* from the former, in being much shorter and deeper. The back and the anal

* *Linnæus* and *de la Cepede* consider this and the preceding as constituting but one species. *Bloch* denies that it has any teeth, but merely a division of the jaws which resembles two teeth. ED.

fins are higher, and the aperture to the gills not semilunar, but oval. The situation of the fins are the same in both.

This species was taken off *Penzance*, and is engraved in Doctor *Borlase's* Natural History of *Cornwall*, from one of Mr. *Jago's* drawings. Both kinds are taken on the western coasts of this kingdom, and not unfrequently in the *Frith* of *Forth*, but in much greater numbers in the warmer parts of *Europe*.

Mr. *Brunnich* informs us, that between *Antibes* and *Genoa*, he saw one of this species lie asleep on the surface of the water: a sailor jumped overboard and caught it.

3. GLOBE. *Tetrodon lagocephalus*. T. abdomine aculeato, corpore lævi, humeris prominentibus. *Gm. Lin.* 1444.? to et subrotundo. *Artedi Syn.* 86. *Gron. mus.* 1. n. 120.
L'Orbe étoilé. Bloch ichth.*
Ostracion catheroplateo-oblongus, ventre tantum aculeatus. *iv.* 127. *tab.* 140.?

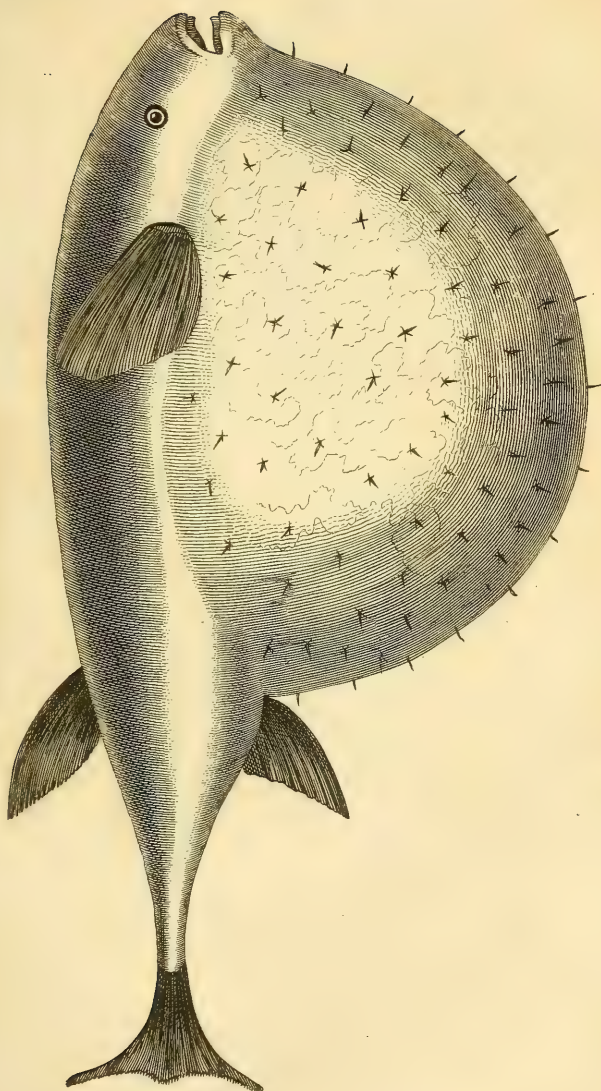
THIS species is common to *Europe* and *South Carolina*. As yet only a single specimen has been discovered in our seas, which was taken at *Penzance* in *Cornwall*.

DESCRIP-
TION.

The length was one foot seven inches; the length of the belly, when distended, one foot; the whole circumference in that situation two feet six. The form of the body is usually oblong, but when alarmed it has the power of inflating the belly to a globular shape of great size. This seems designed as a means of defence against fish of prey; as they have less means of laying hold of it; and are besides terrified by the numbers of spines with which that part is armed, and which are capable of being

* Some doubts may be entertained whether this is the *Orbe étoilé* of *Bloch*, as it differs materially in color, and the spines on the belly arise from four instead of three processes which distinguish the fish described by the *German* naturalist; it may, however, be remarked, that his figure does not correspond with the description in respect to the number of processes. ED.

GLOBE TETRODON.



erected on every part. The mouth is small; the irides white, tinged with red; the back from head to tail almost strait, or at least very slightly elevated; of a rich deep blue color. It has the pectoral, but wants the ventral fins; the dorsal is placed low on the back; the anal is opposite; the tail almost even, divided by an angular projection in the middle; the tail and fins brown; the belly and sides are white, shagreened or wrinkled, and beset with innumerable small sharp spines, adhering to the skin by four processes.

GENUS XIII. SUCKER.

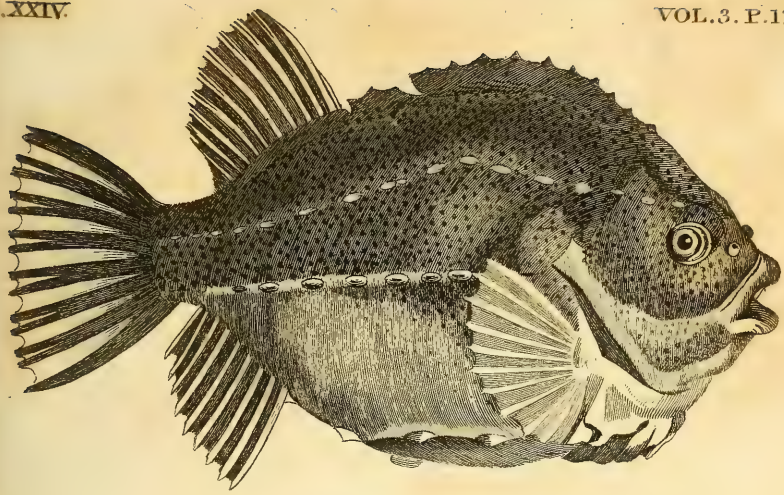
BODY thick, back arched.

FINS ventral, united.

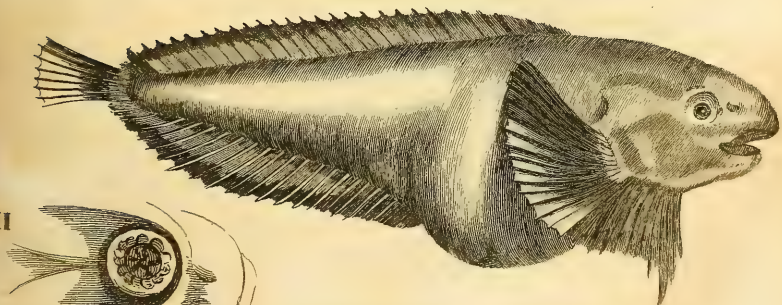
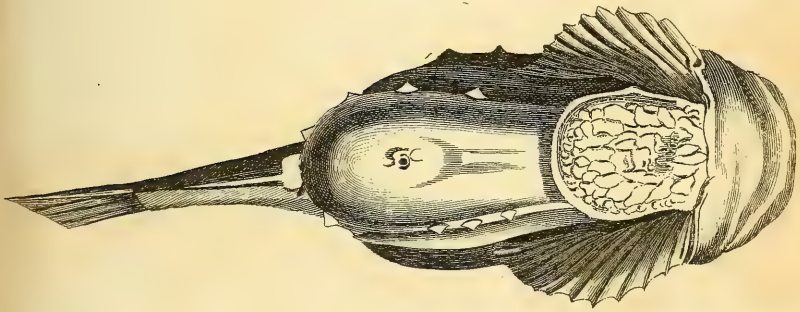
1. LUMP. *Lumpus anglorum.* *Gesner* pore squamis osseis angulato. *Lin. Syst.* 414. *Gm.*
Paralip. 25. *Lin.* 1473.
Seehaess, Haffpodde. *Scho-nevelde*, 41. *Sjurygg-fisk, Stenbit, Quabb-su. Faun. Suec.* No. 320.
Cyclopterus. *Arted. Synon.* Le Lievre de Mer. *Bloch*
87. *Gronov. Zool.* No. *ichth* iii. 92. *tab.* 90.
197. Lump, or Sea-Owl, *Scotis* Le Cycloptere Lompe. *De la*
Cock paddle. *Wil. Ichth.* *Cepede Hist. des Poissons.*
208. *Raii Syn. pisc.* 77. ii. 52.
Cyclopterus Lumpus. C. cor-

DESCRIP-
TION.

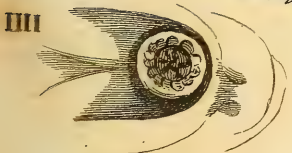
THIS singular fish increases to the weight of seven pounds, and the length of nineteen inches: the shape of the body is like that of the bream, deep and very thick, and it swims edgeways; the back is sharp and elevated; the belly flat; the irides are of a cherry color; the lips, mouth, and tongue, of a deeper red; the jaws lined with innumerable small teeth; the tongue very thick; along the ridge of the back is a row of large bony tubercles; from above the eye to within a small distance of the tail is another row; beneath that a third, commencing at the



LUMP SUCKER.



UNCTUOUS SUCKER . (P. 179)



gills; and on each side the belly a fourth row, consisting of five tubercles like the other; the whole skin is rough, with small tubercles.

On the upper part of the back is a thick ridge improperly called a fin, being destitute of rays; beneath that is the dorsal fin, of a brownish hue, reaching within an inch of the tail; on the belly, just opposite, is another of the same form; the belly is of a bright crimson color; the tail and anal fins are purple; the pectoral fins are large and broad, almost uniting at their base; beneath these is the part by which it adheres to the rocks, &c.; this consists of an oval aperture, surrounded with a fleshy muscular and obtuse soft substance, edged with small thread-like appendages, which concur as so many clasps; by means of this it adheres with vast force to any thing it pleases. As a proof of its tenacity we have known, that on flinging a fish of this species just caught, into a pail of water, it fixed itself so firmly to the bottom, that on taking it by the tail, the whole pail by that means was lifted, though it held some gallons, and that without removing the fish from its hold.

These fish resort in multitudes during spring to the coast of *Sutherland*, near the *Ord* of *Caithness*. The seals which swarm beneath,

prey greatly on them, leaving the skins; numbers of which thus emptied float at that season ashore. It is easy to distinguish the place where seals are devouring this or any unctuous fish, by a smoothness of the water immediately above the spot; this fact is now established; it being a tried property of oil to still the agitation of the waves, and render them smooth.*

Great numbers of these fish are found in the *Greenland* seas during the months of *April* and *May*, when they resort near the shore to spawn. Their roe is remarkably large, which the *Greenlanders* boil to a pulp, and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food: they call them *Nipisets*, or *Cat-fish*, and take quantities of them during the season.†

This fish is sometimes eaten in *England*, being stewed like carp, but is both flabby and insipid.

[The beautiful variety‡ of this fish, called by Doctor *Shaw*, the *Pavonian sucker*, was first described and figured by the reverend *Hugh*

* *Philos. Trans.* 1774. p. 445.

† *Crantz's Hist. Greenland*, i. 96.

‡ Klein indeed makes a species of it in his *Hist. Pisc. Miss.* iv. n. 3. t. 14. f. 5. under the title of *Oncotia dilute viridis et vivide coloribus pavoneis resplendens; dorso parum nigricante, pinnis viridibus, ad ambitum decoratis.*

Davies of *Beaumaris*, in the ninth volume of the Naturalist's Miscellany, *tab.* 310, and differs from the common sort, merely in the brilliancy of its colors. "The back," says that accurate naturalist, "is of a fine azure, deepening towards the edge; the sides are tinged with crimson; the mouth, sides of the head, and all the under parts to the tail, are of a delicate sea-green, with a silvery tinge on the cheeks, the pectoral fins, and the part of the body next the tail; the iris is likewise silvery, the pupil black; the fins and tail terminate in a fine pale yellow." ED.

- | | | |
|---|--|--------------|
| Liparis? <i>Rondel.</i> 272. <i>Gesner pisc.</i> 483. | <i>Syst.</i> 414. <i>Gm. Lin.</i> 1477. | 2. UNCTUOUS. |
| Liparis nostras <i>Dunelm et Eborac.</i> Sea Snail. <i>Wil. Ichth. App.</i> 17. <i>Raii Syn. pisc.</i> 74. <i>Pet. Gaz. tab.</i> 51. <i>fig.</i> 5. | <i>Cyclogaster. Gronov. Zooph.</i> No. 198. | |
| Liparis. <i>Arted. Synon.</i> 177. | La Cycloptere barbue. <i>Bloch ichth.</i> iv. 56. <i>tab.</i> 123. <i>fig.</i> 3. 4. | |
| Cyclopterus Liparis. C. corpore nudo, pinnis dorsali anali caudalique unitis. <i>Lin.</i> | Le Cycloptere Liparis. <i>De la Cepede Hist. des Poissons,</i> ii. 69. | |

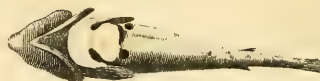
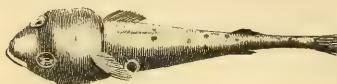
THIS fish takes the name of sea snail from the soft and unctuous texture of its body, resembling that of the land snail. It is almost transparent, and soon dissolves and melts away. It is found in the sea near the mouths of great

rivers. We have seen it in *January* full of spawn.

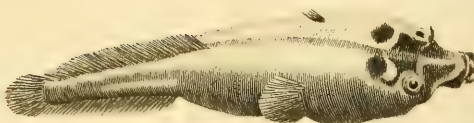
DESCRIP-
TION.

The length is five inches; the color, when fresh taken, a pale brown, sometimes finely streaked with a darker; the shape of the body round, but near the tail compressed sideways; the belly is white and very protuberant; the head is large, thick, and round; there are no teeth in the mouth, but the jaws are very rough; the tongue very large; the eyes very small; the orifice to the gills is very small; it has six branchiostegous rays; the pectoral fins are very broad, thin, and transparent, and almost unite under the throat; the first ray next the throat is very long, extends far beyond the rest, and is as fine as a hair; over the base of each is a sort of *operculum*, or lid, ending in a point; this is capable of being raised or depressed at pleasure; behind the head begins the dorsal fin, which extends quite to the end of the tail; the ventral fin begins at the anus, and unites with the other at the tail; beneath the throat is a round depression of a whitish color, like the impression of a seal, surrounded with twelve small pale yellow *tubera*, by which it probably adheres to the stones like the other species.

BIMACULATED SUCKER.(P.182.)



JURA SUCKER (P.181.)



Lesser Sucking Fish. *Borlase* Lepadogaster. Le Barbier ou 3. JURA.
Nat. Hist. Cornwall, 269. Portecuelle. *Gouan. pisc.*
tab. xxv. fig. 28. 177. *tab. 1. fig. 6, 7.*

THIS species is found in *Cornwall*. I also discovered it in the Sound of *Jura*.

Its length is about four inches ; the skin without scales, slippery, and of a dusky color, occasionally spotted ; the body taper ; the nose grows slenderer from the head, and ends round ; the teeth small ; before each eye are two small filaments united at their base ; behind the eyes are two circular ocellated spots, sometimes blue, but varying in color, and not perceptible in young fish. In the middle of the back is an oval mark formed by small dots, of a whitish color. The dorsal fin lies near the tail, and consists of eleven rays ; the anal is placed opposite, and has nine rays ; the tail is rounded ; the ventral fins have four rays, joined by an intervening membrane with an oval depression in the middle ; beyond that is another strong membrane with a similar depression. By means of these instruments it adheres to stones or rocks.

DESCRIP-
TION.

4. BIMACULATED. *Br. Zool. iii. 397. App.*

Montagu in Lin. Tr. vii. 293.
id. in Wern. Mem. 92.

DESCRIP-
TION.

THE head is flat and tumid on each side; the body taper. The pectoral fins placed unusually high. It has only one dorsal fin; placed low, or near the tail; the tail is even at the end; the color of the head and body is of a fine pink and white in minute spots; the mouth small; the teeth small and regular; on each side of the engine of adherence on the belly, behind the pectoral fin, is a purple spot, surrounded by a ring of white. When young, it is of a green color, minutely speckled with blue, and without pectoral spots; in this state it is proportionally longer, and differs a little in the shape of the fins. The eyes are considerably prominent, capable of very considerable motion, independent of each other, and revolve within a fixed transparent sphere, which protects those delicate organs. It rarely exceeds an inch and a half in length.

This species was taken at *Weymouth*, and was communicated to me by the late Dutchess Dowager of *Portland*.*

* Mr. *Montagu* informs us, it is frequently taken by deep dredging at *Torcross* in *Devonshire*. The editor has, on his

Cyclopterus Montagui. *Montagu in Wern. Mem.* 91.
tab. 5. f. 1.

Turton Br. Fauna. 115.

5. MONTAGU.

[THIS species, which seldom exceeds two inches in length, was first discovered by the able naturalist whose name it bears. The body is rounded as far as the vent; the posterior part somewhat compressed; the head broad, inflated about the gills; the mouth armed with several rows of teeth; the eyes small and placed high; before them are two minute erect tubes or filaments; the dorsal fin consists of about twenty-six rays; the anal of twenty-four; the united pectoral and ventral fins, of twenty-nine, and the tail of twelve; the general color of the body is a purplish brown, the under parts and the sucker white; the latter is circular and composed of thirteen concave tubercles; the belly is very tumid. It inhabits only the rocky parts of the coast, and has only been obtained at extraordinary low tides, chiefly at *Milton* on the south coast of *Devonshire*. ED.

DESCRIP-
TION.

respectable authority, enlarged the description and corrected some trifling errors of the former edition, which arose from Mr. *Pennant* never having had an opportunity of seeing a fresh specimen. ED.

GENUS XIV. PIPE FISH.

Nose long and tubular.

ORIFICE, none to the gills.

APERTURE, the breathing, on the hind part of the head.

FINS ventral none.

BODY covered with a strong crust.

- | | | |
|------------|---|---|
| 1. LONGER. | Acus <i>Aristotelis</i> caudâ serpentinâ. <i>Sib. Scot.</i> 24. <i>Tab.</i> 19. | gulo, pinnâ caudæ carens? <i>Arted. Spec.</i> 3. |
| | Typhle altera. <i>Gesner pisc.</i> 1025. | Syngnathus barbarus. S. pinnis caudæ anique nullis, corpore sexangulato? <i>Lin. syst.</i> 417. <i>Gm. Lin.</i> 1457. |
| | Syngnathus corpore quadran- | |

DESCRIP-
TION.

THIS species, described by Sir *Robert Sibbald*, was two feet in length ; that we examined only sixteen inches. The nose was an inch long, compressed sideways, and the end of the lower mandible turned up : the aperture of the mouth very small ; the irides were red ; behind each eye was a deep brown line ; the body, in the thickest part, was about equal to a swan's quill, hexangular from the end of the dorsal fin ; from thence to the tail quadrangular ; the belly was



SHORTER PIPE FISH. (P. 186)

Nº 6a.



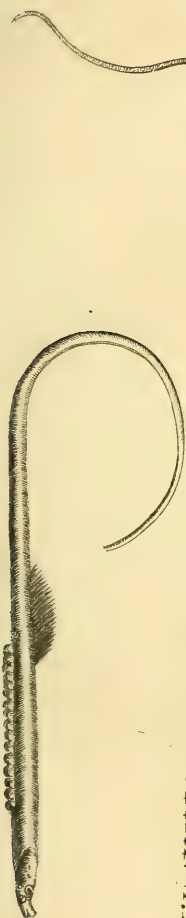
LONGER PIPE FISH. (P. 184)

Nº 61.

2.



LESSER PIPE FISH. (P. 187)



Nº 62.



slightly carinated, and marked along the middle with a dusky line; under the tail, commencing at the *anus*, was a *sulcus* or groove, six inches and a half long, covered by two longitudinal valves which concealed a multitude of young fish; on crushing this part, hundreds may be observed to crawl out. The general color of the fish was an olive brown: the sides marked with numbers of bluish lines pointing from the back to the belly, which, in dried fish, seemed like the signs of so many joints; those in a fresh subject ceased beyond the vent; all beyond that was spotted with brown; the dorsal fin was narrow and thin, consisting of forty rays, was two inches long, and placed rather nearer to the head than the tail; the vent was seven inches from the tip of the nose; the body to that orifice was of an equal thickness, but from thence tapered to a very small point, having no mark of a fin; the pectoral fins had twelve rays; the anal three.

When this fish and the next species are dried, they appear covered with numbers of angular crusts, finely radiated from their centre.

As we want a generical name in our language for this genus, we call it the *Pipe Fish*, from its slender body.

2. SHORTER. L' Orueul marin. *Belon*, 446. radiatis, corpore septemangulato. *Lin. syst.* 416.
Acus secunda species, sive, *Gm. Lin.* 1455.
acus Aristotelis. Rondel. 229.
Typhle. *Gesner pisc.* 1025. Kantnahl. *Faun. Suec.* No. 376.
Trummeter, Meherschlange. *Schonevelde*, 11. *Syngnathus cauda pinnata.*
Acus Aristotelis seu secunda. *Gronov. Zooph.* No. 172.
Wil. Ichth. 158. *Raii syn.* Sea-adder. *Borlase Cornw.*
pisc. 47. 267.
Syngnathus corpore medio La Trompette. *Bloch ichth.*
heptagono, caudâ pinnatâ. iii. 102. *tab.* 91. *f.* 1.
Arted. synon. 2. Le Syngnathe trompette. *De*
Syngnathus acus. S. pinnis la *Cepede Hist. des Pois-*
caudæ ani pectoralibusque sons, ii. 27.

THIS is shorter and thicker than the former, yet I have seen one of the length of sixteen inches. The middle of the body in some is hexangular, in others heptangular. *Linnaeus* constitutes two species of them, his *Syngnathus Typhle*, and his *Syngnathus Acus*; but we join with Doctor *Gronovius*, in thinking them only varieties of the same fish.

DESCRIPTION. The mouth is formed like that of the former; the irides are yellow; close behind the head are the pectoral fins, which are small and short; on the lower part of the back is one narrow fin; beyond the vent the tail commences, which is long and quadrangular; at the extremity is a fin round and radiated. The body is covered with a strong crust, elegantly divided into small com-

partments; the belly is white; the other parts brown.

Besides these species of hard-skinned Pipe fish, we have been informed, that the *Syngnathus Hippocampus* of *Linnæus*, or what the *English* improperly call the sea horse, has been found on the southern shores of this kingdom.

Acui Aristotelis congener pisciculus, pueris Cornubiensibus *Sea Adder*, *Acus Lumbriciformis*, aut *Serpentinus*. *Wil. Ichth.* 160. *Raii syn. pisc.*

Syngnathus teres, pinnis pec-

toralibus caudaque carens.

Arted. synon. 2.

Syngnathus ophidion. *Lin.*

syst. 417. *Gm. Lin.* 1456.

Hafsnahl, Tangsnipa. Faun.

Succ. No. 375.

Le Serpent de mer. Bloch

ichth. iii. 104. *tab.* 91. *f.* 3.

3. LITTLE.

THE little pipe fish seldom exceeds five inches in length, is very slender, and tapers off to a point. It wants both the pectoral and tail fins; is covered with a smooth skin, not with a crust as the two former kinds are. The nose is short and turns a little up; the eyes are prominent; on the back is one narrow fin.

This species is not viviparous; on the belly of the female is a long hollow, to which adhere the eggs, disposed in two or three rows. They are large, and not numerous.

The synonym of *Serpent* is used in several

DESCRIP-
TION.

languages to express these fishes; the *French* call one species *Orueul*, from a sort of snake not unlike the blindworm; the *Germans* call it *Meherschlange*; and the *Cornish*, the sea adder.

4. ÆQUO- Syngnathus æquoreus. S. pore angulato. Gm. Lin.
REAL. pinna caudæ radiata, pec- : 1456.
toralibus anique nullis, cor- Montagu. Mem. Wern. Soc.
85. tab. 4. f. 1.

[THIS species, which had hitherto remained among the uncertainties of this ill-ascertained genus, was discovered by the indefatigable Mr. *Montagu*, near *Salcomb* in *Devonshire*, and is described by him with precision, in the first volume of the *Memoirs of the Wernerian Society*.

DESCRIP-
TION.

Its length was twenty-one inches; the snout similar to that of the Shorter Pipe-Fish; the body compressed, rather angular, with an acute dorsal and abdominal ridge, which, with three slight angles on each side, give it an octangular appearance; it is of equal size from the gills to the vent; from thence to the extremity of the tail it is almost round and extremely taper. The dorsal fin, which commences considerably before the vent, and terminates rather behind it, consists of forty rays; the end of the tail is extremely small, compressed into a spurious fin,

invisible to the naked eye. It has neither pectoral or ventral fins. In another specimen, fifteen inches in length, found on the coast in summer in a dried state, there was no visible caudal fin ; and the angle on the back and belly was also less defined. The color of the body is yellowish, with transverse pale lines, with dark margins. ED.

GENUS XV. TRUMPET FISH.

SNOUT prolonged.

BODY compressed, carinated beneath.

FINS ventral united.

1. SNIPE
NOSED.

Centriseus Scolopax. C. corpore squamoso scabro, cauda recta extensa. *Gm. Lin.* 1461. *Gron. Zooph.* 128.

Balistes aculeis 2 loco pinna- rum ventralium, solitario in- fra anum. *Arted. synon.* 82.

Klein, pisc. mass. iv. 24.

Trumpet or Bellows Fish.

Will. ichth. 160. *tab.* 25.

f. 2. *Raii syn. pisc.* 50.

La Becasse. *Bloch ichth.* iv. 64. *tab.* 123. *f.* 1.

Le Centrisque Beccasse. *De la Cope Hist. des Pois- sons*, ii. 95.

Snipe Centriseus. *Shaw Gen.*

Zool. v. *part.* ii. 549.

DESCRIP-
TION.

[THE body of this fish is short and deep, com- pressed on the sides, and covered with rough hard scales, of a pale red color. The head, which is rather wide, terminates in a long cylindrical snout, at the extremity of which, is situated a small mouth. The eyes are large, the pupil black, the irides pale red. The fins are of a grey color; the first dorsal fin consists of four strong rays, of which the first is the largest, and is remarkably indented on two sides; the ventral fins are occasionally concealed in a bony *sulcus* which is lodged behind them. One of these extremely rare fish was taken in *St. Austle's* bay in *Cornwall*, in 1804. ED.

DIV. III.

BONY FISHES.

SECT. I.

APODAL.

GENUS XVI. EEL.

BODY long, slender, and slippery.

NOSTRILS tubular.

FINS, back, ventral, and tail, united.

APERTURE to the gills small, and placed behind
the pectoral fins.

RAYs branchiostegous ten.

- | | | |
|---|---------------------------------------|------------|
| <i>Eγγίλινος. Arist. Hist. an. Lib.</i> | <i>feriore longiore. Arted. syn.</i> | 1. COMMON. |
| iv. c. 11. vi. 14. 16. <i>Oppian</i> | 39. | |
| <i>Halieut. i. 516. iv. 450.</i> | <i>Muræna Anguilla. Lin. syst.</i> | |
| <i>Anguilla Plinii Lib. ix. c. 21.</i> | 426. <i>Gm. Lin. 1133. Gro-</i> | |
| <i>L' Anguille. Belon, 291. Obs.</i> | <i>nov. Zooph. No. 166.</i> | |
| 55. | <i>Ahl. Faun. Suec. No. 301.</i> | |
| <i>Anguilla. Rondel. fluv. 198.</i> | <i>Aal. Kram. 387.</i> | |
| <i>Gesner pisc. 40.</i> | <i>L' Anguille. Bloch ichth. iii.</i> | |
| <i>Ael. Schonevelde, 14.</i> | 3. <i>tub. 73.</i> | |
| The Eel. <i>Wil. pisc. 109. Raii</i> | <i>La Murene anguille. De la</i> | |
| <i>syn. pisc. 37.</i> | <i>Cepede Hist. des Poissons,</i> | |
| <i>Muræna unicolor maxilla in-</i> | ii. 226. | |

THE eel is a very singular fish in several things that relate to its natural history, and

in some respects borders on the nature of the reptile tribe.

It is known to quit its element, and during night to wander along the meadows, not only for change of habitation, but also for the sake of prey, feeding on the snails it finds in its passage. During winter it beds itself deep in the mud, and continues in a state of rest like the serpent kind. It is very impatient of cold, and will eagerly take shelter in a wisp of straw flung into a pond in severe weather, which has sometimes been practised as a method of taking them. *Albertus** goes so far as to say, that he has known eels to shelter in a hay-rick, yet all perished through excess of cold.

It has been observed, that in the river *Nyne*,† there is a variety of small eel, with a lesser head and narrower mouth than the common kind, that they are found in clusters in the bottom of the river, and are called *Bed-eels*: these are sometimes roused up by violent floods, and are never found at that time with meat in their stomachs. This bears such an analogy with the clustering of blindworms in their quiescent state, that we

* *Gesner pisc.* 45.

† *Morton's Hist. Northampt.* 419. *Pliny* observes, that the eels of the lake *Benacus* collect together in the same manner in the month of *October*, possibly to retreat from the winter's cold. *Lib.* ix. c. 22.

cannot but consider it as a further proof of a partial agreement in the nature of the two genera.

The antients adopted a most wild opinion about the generation of these fish, believing them to be either created from the mud, or that the scrapings of their bodies, which they left on the stones, were animated and became young eels. Some moderns gave into these opinions, and into others that were equally extravagant. They could not account for the appearance of these fishes in ponds that never were stocked with them, and which were even so remote as to make their being met with in such places, a phænomenon that they could not solve. But there is much reason to believe, that many waters are supplied with these fishes by the aquatic fowl of prey, in the same manner as vegetation is spread by many of the land birds, either by being dropped as they carry them to feed their young, or by passing quick through their bodies, as is the case with herons; and such may be the occasion of the appearance of these fishes in places where they were never seen before. As to their immediate generation, it has been sufficiently proved to be effected in the ordinary course of nature, and that they are viviparous.

GENERA-
TION.

VIVIPA-
ROUS.

They are extremely voracious, and very destructive to the fry of other species. No fish lives so long out of water as the eel: it is extremely tenacious of life, as its parts will move a considerable time after they are flayed and cut into pieces.

DESCRIP-
TION.

The eel is placed by *Linnaeus* in the genus of *Muraena*, his first of the apodal fishes, or such which want the ventral fins. The eyes are situated not remote from the end of the nose; the irides are tinged with red; the under jaw is longer than the upper; the teeth are small, sharp, and numerous; beneath each eye is a minute orifice; at the end of the nose are two others, small and tubular. It is furnished with a pair of pectoral fins, rounded at their ends; another narrow fin, on the back, unites with that of the tail; and the anal fin joins it in the same manner beneath; behind the pectoral fins is the orifice to the gills, which are concealed in the skin. Eels vary much in their colors, from a sooty hue to a light olive green; and those which are called silver eels, have their bellies white, and a remarkable clearness throughout.

SILVER
EELS.

GRIGS.

Besides these, there is another variety of this fish, known in the *Thames* by the name of *Grigs*, and about *Oxford* by that of *Grigs* or *Gluts*. These are scarcely ever seen near *Oxford* in the

winter, but appear in spring, and bite readily at the hook, which common eels in that neighbourhood will not. They have a larger head, a blunter nose, thicker skin, and are less fat than the common sort; neither are they so much esteemed, nor do they often exceed three or four pounds in weight.

Common eels grow to a large size, sometimes so great as to weigh fifteen or twenty pounds, but that is extremely rare. As to instances brought by *Dale* and others, of their increasing to a superior magnitude, we have much reason to suspect them to have been congers, since the enormous fish they describe, have all been taken at the mouths of the *Thames* or *Medway*.

The eel is the most universal of fishes, yet is scarcely ever found in the *Danube*, though it is very common in the lakes and rivers of *Upper Austria*. The *Romans* held it very cheap, probably from its likeness to a snake.

Vos anguilla manet longæ cognata colubræ,
Vernula riparum pinguis torrente cloaca. *

For you, is kept a sink-fed snake-like eel.

They are likewise detested by the *Scottish* highlanders.

On the contrary, the luxurious *Sybarites*

* *Juvenal. Sat. v. 103.*

were so fond of these fishes, as to exempt from every kind of tribute the persons who sold them.*

2. CONGER. *Κόγγρος*. *Arist. Hist. an. lib.* i. &c. *Muraena* supremo margine pinnae dorsalis nigro. *Arted. synon.* 40.
- Γόγγρος*. *Oppian. Halieut.* i. 113. 521. *Muraena* Conger. *M.* rostro tentaculis duobus, linea laterali ex punctis albida. *Lin. syst.* 426. *Gm. Lin.* 1135.
- Conger. *Plinii lib.* ix. c. 16. 20. *Le Congre.* *Belon* 159. *Le Congre.* *Bloch ichth.* v. 33. tab. 155.
- Conger. *Rondel.* 394. *Gesner pisc.* 290. *The Conger, or Conger Eel.* *La Murene Congre.* *De la Cépède Hist. des Poissons,* ii. 269.
- Wil. Ichth.* iii. *Raii syn. pisc.* 37.

SIZE.

THE conger eel grows to a vast size. Doctor *Borlase*, to whom we are obliged for much information relating to this species, assures us, that it is sometimes taken near *Mount's-Bay* of one hundred pounds weight. †

DESCRIP-
TION.

It differs from the common eel in the following particulars: 1. Its color in general is more dark. 2. Its eyes much larger in proportion.

* *Athenæus. Lib.* xii. p. 521.

† We have heard of some taken near *Scarborough* that were ten feet and a half long, and eighteen inches in circumference in the thickest part. The proportions of one taken in the *Dee* were: length four feet; girth, a little below the head, one foot; weight ten pounds.

3. The irides are of a bright silvery color. 4. The lower jaw is rather shorter than the upper. 5. The side line is broad, whitish, and marked with a row of small spots; (Mr. *Ray* says a double row, but we did not observe it in the fish we examined.) 6. The edges of the dorsal and anal fins are black. 7. It has more bones than the common eel, especially along the back quite to the head. 8. It grows to a much larger size. As to the distinction that Mr. *Ray*, and other writers, make of the small beards at the end of the nose, we think it not to be depended on, they being sometimes found in both kinds, and sometimes entirely wanting.

We believe they generate like the fresh-water species: innumerable quantities, of what are supposed to be their fry, come up the *Severn* about the month of *April*, preceding the Shad, which it is conjectured migrate into that river to feed on them: they are called *Elvers*. They quite swarm during their season, and are taken in a kind of sieve made of hair-cloth, fixed to a long pole; the fisherman standing on the edge of the water during the tide, puts in his net as far as he can reach, and drawing it out again takes multitudes at every sweep, and will catch as many during one tide as will fill a

ELVERS.

bushel. They are dressed, and reckoned very delicate.

Congers are extremely voracious, preying on other fish, and on crabs at the time they have lost their shell, and are in a soft state. They and eels in general are also particularly fond of carcasses of any kind, being frequently found lodged in such that are accidentally taken up.

These fishes are an article of commerce in *Cornwall*; numbers are taken on that coast, and exported to *Spain* and *Portugal*, particularly to *Barcelona*. The quantities that were sent from *Mount's Bay* for five years, were as follow:

	<i>Cwt.</i>	<i>qr.</i>	<i>lb.</i>
1756	46	0	13
1757	164	0	21
1758	164	1	3
1759	213	0	3
1760	71	3	0

CAPTURE. Some are taken by a single hook and line, but (because that method is tedious, and does not answer the expence of time and labour) they are chiefly caught by *Bulters*, which are strong lines five hundred feet long, with sixty hooks,

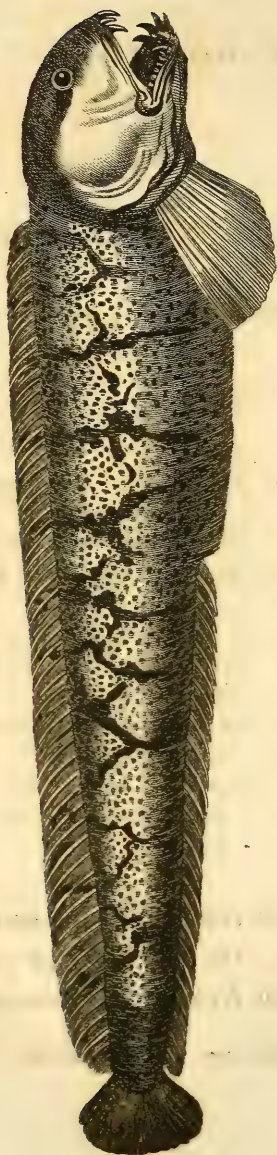
each eight feet asunder, baited with pilchards or mackrel : the *Bulters* are sunk to the ground by a stone fastened to them : sometimes such a number of these are tied together as to reach a mile. We have been told that the fishermen are very fearful of large congers, least they should endanger their legs by clinging round them ; they therefore kill them as soon as possible by striking them on the navel.

They are afterwards cured in this manner : they are slit, and hung on a frame till they dry, having a considerable quantity of fat, which it is necessary should exude before they are fit for use. It is remarkable that a conger of a hundred weight will waste by drying to twenty-four pounds ; the people therefore prefer the smallest, possibly because they are soonest cured. During the process there is a considerable stench, and it is said, that in the fishing villages the poultry are fed with the maggots that drop from the fish.

The *Portuguese* and *Spaniards* use those dried congers after they have been ground into a powder, to thicken and give a relish to their soups. We think they are sold for about forty shillings the quintal, which weighs one hundred and twenty-six pounds.

A fishery of congers would be of great advantage to the inhabitants of the *Hebrides*. Perhaps they would at first undertake it with repugnancy, from their absurd aversion to the eel kind.

WOLF FISH.



GENUS XVII. WOLF FISH.

HEAD blunt.

BODY long.

FIN dorsal, one, reaching almost from the head to the tail.

TEETH fore, conic and large; grinders flat and round.

RAYs branchiostegous, six.

Anarrhicas. <i>Gesner Paralip.</i> 4.	Kigutilik <i>i. e.</i> dentatus. 1. COMMON.
Lupus marinus. <i>Caii opusc.</i> 113.	<i>Crantz's Greenl.</i> i. 96.
Lupus marinus nostras, quem <i>incolæ</i> Wolff. <i>Schonevelde</i> , 45. <i>tab.</i> 5.	Anarrhicas. <i>Arted. Synon.</i> 39.
Cat-Fish. <i>Sib. Scot.</i> iii. 25. <i>tab.</i> 16.	Anarrhicas Lupus. <i>Lin. Syst.</i> 430. <i>Gm. Lin.</i> 1142.
Wolf Fish, Sea Wolf, or Woof. <i>Wil. Ichth.</i> 130. <i>Raii Syn. pisc.</i> 40.	A. strigosus <i>ib.</i> 1144.
Steen-bider. <i>Pontop. Norway</i> , ii. 151.	Zee Wolf. <i>Gronov. Mus.</i> No. 44. <i>Zooph.</i> No. 400.
	Le Loup marin. <i>Bloch ichth.</i> iii. 15. <i>tab.</i> 74.
	L'Anarique Loup. <i>De la Cepede Hist. des Poissons</i> , ii. 300.

THIS fish seems to be confined to the north-
ern parts of the globe. We find it in the seas
of *Greenland*, in those of *Iceland** and *Norway*, PLACE.

* Where it is called *Steinbeisser*. *Schonevelde*, 45.

on the coasts of *Scotland*, and of *Yorkshire*, and lastly, in that part of the *German* ocean, which washes the shores of *Holland*, the most southern of its haunts we can with any certainty mention.

It is a most ravenous and fierce fish, and when taken, fastens on any thing within its reach: the fishermen dreading its bite, endeavour as soon as possible to beat out its fore teeth, and then kill it by striking it behind the head. *Schonevelde* relates, that its bite is so hard that it will seize on an anchor, and leave the marks of its teeth in it; and the *Danish* and *German* names of *Steenbider*. and *Steinbeisser*, express the sense of its great strength, as if it was capable of crushing even stones with its jaws.

FOOD. It feeds almost entirely on crustaceous animals, and shell fish, such as crabs, lobsters, prawns, muscles, scallops, large whelks, &c. these it grinds to pieces with its teeth, and swallows with the lesser shells. It does not appear they are dissolved in the stomach, but are voided with the *fæces*, for which purpose the aperture of the anus is wider than in other fish of the same size. It is full of roe in *February*, *March*, and *April*, and spawns in *May* and *June*. This fish has so disagreeable and

horrid an appearance, that nobody at *Scarborough*, except the fishermen, will eat it, and they prefer it to holibut. They always, before dressing, take off the head and skin.

The sea wolf grows to a large size : those on the *Yorkshire* coast are sometimes found of the length of four feet, and, according to Doctor *Gronovius*, they have been taken near *Shetland*, seven feet long, and even more. That which we examined was three feet two inches and an half from the tip of the nose to the end of the tail ; the length of the head was eight inches ; from the gills to the vent, ten ; from thence to the tip of the tail, twenty and a half ; the circumference of the head was seventeen inches, at the shoulders twenty, but near the tail only four and a half ; its weight was twenty pounds and a quarter. The head is a little flatted on the top ; the nose blunt ; the nostrils very small ; the eyes small, and placed near the end of the nose. Irides pale yellow. The teeth are very remarkable, and finely adapted to its way of life. The fore teeth are strong, conical, diverging a little from each other, stand far out of the jaws, and are commonly six above, and the same below, though sometimes there are only five in each jaw ; these are supported withinside by a row of lesser teeth, which

DESCRIP-
TION.

makes the number in the upper jaw seventeen or eighteen, in the lower eleven or twelve; the sides of the under jaw are convex inwards, which greatly adds to their strength, and at the same time allows room for the large muscles with which the head of this fish is furnished; the *dentes molares*, or grinding teeth of the under jaw, are higher on the outer than the inner edges, which incline their surfaces inward; they join to the canine teeth in that jaw, but in the upper are separate from them; in the centre are two rows of flat strong teeth, fixed on an oblong basis upon the bones of the palate and nose. These and the other grinding teeth are often found fossil, and in that state

BUFONITES. called *Bufonites*, or *Toad-stones*: they were formerly much esteemed for their imaginary virtues, and were set in gold, and worn as rings. The two bones that form the under jaw are united before by a loose cartilage, which mechanism admitting of a motion from side to side, most evidently contributes to the design of the whole, *vis.* a facility of breaking, grinding, and comminuting its testaceous and crustaceous food. At the entrance of the gullet, above and below, are two echinated bones; these are very small, being the less necessary, as the food is in a great measure comminuted

in the mouth by aid of the grinders. The body is long, and a little compressed sideways; the skin smooth and slippery. The pectoral fins consist of eighteen rays, are five inches long, and seven and a quarter broad; the dorsal fin extends from the hind part of the head almost to the tail; the rays in the fresh fish are not visible; the anal fin extends as far as the dorsal fin; the tail is round at its end, and consists of thirteen rays. The sides, back, and fins are of a livid lead color; the two first marked downwards with irregular obscure dusky lines; these in different fishes have different appearances. The young are of a greenish cast, resembling the sea wrack, which they reside amongst for some time after their birth.

We think ourselves much indebted to Mr. *Travis*, Surgeon, at *Scarborough*, for his ingenious remarks on this fish, as well as on several others that frequent that coast, being a gentleman much skilled in ichthyology, and extremely liberal in communicating his knowledge.

GENUS XVIII. LAUNCE.

HEAD slender.

BODY long and square.

LIP upper, doubled in.

FIN dorsal and anal, reaching almost to the tail.

RAYS branchiostegous, seven.

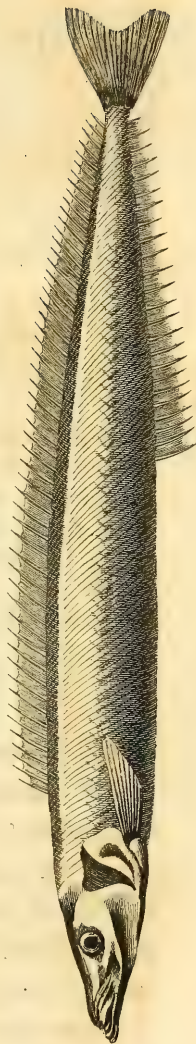
- | | |
|---|--|
| <p>1. SAND. Ammodytes piscis, ut nos vocavimus pro <i>anglico</i> Sandilz. <i>Gesner paralip.</i> 3. Tobian, vel Tobias Sandtspring. <i>Schonevelde</i>, 76. Ammodytes <i>Gesneri</i>, <i>Wil. Ichth.</i> 113. Sand Eels, or Launces. <i>Raii Syn. pisc.</i> 38, 165. Ammodytes. <i>Arted. Synon.</i> 29.</p> | <p>Ammodytes Tobianus. <i>Lin. Syst.</i> 430. <i>Gm. Lin.</i> 1144. Tobis. <i>Faun. Suec.</i> 302. <i>Gronov. Zooph.</i> No. 404. Le Lançon. <i>Bloch ichth.</i> iii. 20. <i>tab.</i> 75. L'Ammodyte appat. <i>De la Cépède Hist. des Poissons</i>, ii. 274.</p> |
|---|--|

THE launce is found on most of our sandy shores during some of the summer months: it conceals itself on the recess of the tides beneath the sand, in such places where the water is left, at the depth of about a foot, and in some places is dug out, in others drawn up by means of a hook contrived for that purpose. It is commonly used for baits for other fish, but is also very delicate eating.

ANGLESEY MORRIS. (P. 212.)



SAND LAUNCE. (P. 206.)



These fish are found in the stomachs of the Porpesse, an argument that the last roots up the sand with its nose as hogs do the ground.

They grow sometimes the length of nine or ten inches; the females are longer and slenderer than the males. The form of the body is square, the sides are rounded, and the angles not sharp: it is nevertheless long and slender; the head is small and taper; the under jaw much longer than the upper: the upper jaw is moveable, capable of being protruded, so that when open the gape is very wide. The irides are silvery. The dorsal fin runs almost the whole length of the back, is very narrow, and consists of fifty-eight rays; the pectoral fins are small, and have twelve rays; the anal is placed much nearer the tail than the head, is narrow, and extends almost to the former; the tail is forked, but the lobes rounded at their extremities. The color of the back is blue, varying with green; on each side the back is a narrow dusky line or two; the sides and belly are silvery; the lateral line strait.

DESCRIP-
TION.

GENUS XIX. OPHIDIUM.

HEAD rather naked.

TEETH in the jaws, palate, and throat.

GILLS, aperture of, large.

BODY ensiform.

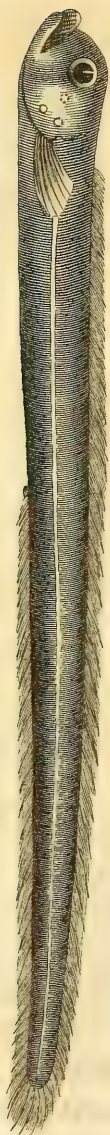
- | | | |
|--------------------|--|---|
| 1. BEARD-
LESS. | Ophidium imberbe. Oph. max-
illis imberbibus cauda obtu-
siuscula. <i>Gm. Lin.</i> 1147. | <i>Br. Zool. App.</i> iii. 398.
<i>Shaw Gen. Zool.</i> iv. part i. p.
70. |
| | <i>Faun. Suec.</i> 319. | L'Ophidie imberbe. <i>De la</i> |
| | Ophidium cirris carens. <i>Arted.</i>
<i>Syn. pisc.</i> 42. | <i>Cepede Hist. des Poissons,</i>
ii. 281. |
| | Ophidium alterum flavum et
imberbe. <i>Raii Syn. pisc.</i>
39. <i>Wil. ichth.</i> 113. | <i>Montagu in Mem. Wern. Soc.</i>
95. tab. 4. f. 2. |

DESCRIP- [THE Beardless Ophidium was first added to
TION. the catalogue of *British* fishes, by Mr. *Pen-
nant*, to whom it was communicated by the
Dutchess of *Portland*; the specimen was found
near *Weymouth*, and a figure of it given in the
Appendix to the Zoology, unaccompanied by
any description.

Mr. *Montagu* thus describes one of this rare
species, which was taken on the southern coast
of *Devonshire*.

Its length was about three inches; its depth
did not exceed a quarter of an inch. The pec-

BEARDLESS OPHIDIUM.





toral fin was furnished with eleven rays, the dorsal with about seventy-seven, the anal with forty-four, and the tail with eighteen or twenty; the head was obtuse; the eyes large and placed forward; the body ensiform, and considerably compressed toward the tail; the lateral line obscure; the pectoral fin rounded; the dorsal fin commenced near the head, and with the anal continued and united to the tail; the mouth, when closed, inclined obliquely upwards; the lip marginated; the gill membranes inflated beneath. The color purplish brown, disposed in minute speckles; the fins the same, except the pectoral and caudal, the first of which is pale, the last yellowish.* ED.

* *Montagu in Mem. Wern. Soc.* 95.

GENUS XX. SCABBARD FISH.

HEAD lengthened.

EYES, large lateral.

BODY compressed, carinated, ensiform.

FINS, no true ventral.*

1. FOUR-
TOOTHED.

Xipotheca tetradens. Montagu in Mem. Wern. Soc. i. 82 & 623.

DESCRIP-
TION.

[LENGTH five feet six inches; depth near the gills four inches and an half; thickness in the same part not exceeding an inch and a quarter; weight, without the intestines, six pounds one ounce. Each jaw furnished with an irregular row of extremely sharp pointed teeth, standing very conspicuous, even when the mouth is closed; the under jaw longest, terminating in a callous projecting substance: in the upper jaw are four large teeth in front; eyes large; irides silvery; the color of the skin, which is quite smooth, and destitute of scales,

* A pair of scales, situated considerably behind the pectoral fins, seem to supply their place. This fish, therefore, appears to be a link in the chain of nature, which connects the *Apodal* Fishes with the three other sections which have ventral fins.
H. D.

is like burnished silver, with a bluish tint; the dorsal fin extends from the head to the tail; the pectoral fins long and pointed; the anal short; the tail forked and small in proportion to the size of the body.

This singular fish was caught in *Salcomb* harbour in *South Devon*, in *June* 1808, and fortunately fell into the hands of Mr. *Montagu*, who has described and figured it in the first volume of the *Memoirs of the Wernerian Society*. ED.

GENUS XXI. MORRIS.

HEAD small.

BODY extremely thin, compressed.

FINS pectoral, ventral, caudal, none.

1. ANGLE-SEY. *Leptocephalus. Gronov. Zooph.* *Turton's Brit. Fauna.* 88.
 No. 410. *tab. 13. f. 3.* *Le Leptocephale Morrisien.*
L. Morrisii. Gm. Lin. 1150. *De la Cepede Hist. des*
Shaw Gen. Zool. iv. 84. *tab.* *Poissons,* ii. 143.
 10.

THIS species was discovered in the sea near *Holyhead* by the late Mr. *William Morris*, and, in memory of our worthy friend, we have given it his name. On receiving it from Mr. *Morris*, we communicated it to that accurate Ichthyologist, Doctor *Laurence Theodore Gronovius*, of *Leyden*, who has described it in his *Zoophylacium*, under the title of *Leptocephalus*, or small head.

DESCRIP-
TION.

The length was four inches; the head very small; the body compressed sideways, extremely thin, and almost transparent, about the tenth of an inch thick, and in the deepest part about one third of an inch; towards the tail it grew more slender, and ended in a point; towards the head it sloped down, the head lying far

beneath the level of the back; the eyes large; the teeth in both jaws very small; the lateral line strait; the sides marked with oblique strokes, that met at the lateral line; the aperture to the gills large. It wanted the pectoral, ventral, and caudal fins; the dorsal fin was extremely low and thin, extending the whole length of the back nearly to the tail. The anal fin was of the same delicacy, and extended to the same distance from the anus.

[An attempt having lately been made to cancel this subject from the *British Zoology*, we shall, we trust, be pardoned for borrowing from the late edition of Mr. *Pennant's Tours in Wales*,* the following part of the Rev. *Hugh Davies's* letter on this subject.

“ I beg leave to add, I know the fish well;
“ it has been my lot to see four specimens of
“ it; one was taken in *Llienawg* wear, about
“ three miles distant from *Beaumaris*, the other
“ three (in the amusement of prawning) below
“ *Beaumaris* green, to the north east, in shallow
“ water, on the recess of the tide, among some
“ bushy sea-weed. They who have taken most
“ pleasure in bestowing attention on the works
“ of Providence, cannot fail to admire, with

* Vol. iii. *app.* p. 425.

“ *Ray* and *Derham*, how the several parts of
“ animals are peculiarly formed and adapted
“ to their different modes of living, and the
“ places which they are intended to inhabit;
“ under this idea, I cannot help thinking, that
“ the make of this animal may be accounted
“ for. As those of the specimens I have seen
“ were taken in a dense mass of wrack or sea-
“ weed, I may reasonably conclude that the
“ animal was designed by the Great Author of
“ nature to pass his life in such a situation;
“ the parts of it were therefore adapted to its
“ condition. The small head is well calculated
“ to lead the way through so intricate a mass;
“ its very compressed body to glide between
“ the numerous folds and confined passes,
“ formed by the frequent ramifications of these
“ vegetables; its large eyes to discover its mi-
“ nute prey in the gloom of so dense a grove,
“ when without doubt, feet, wings, and rudder,
“ that is to say, caudal, pectoral, and ventral
“ fins, are not only useless, but would be abso-
“ lute incumbrances.”

In addition to the proofs which *Mr. Davies* has here produced of the existence of this fish, we have the unexpected satisfaction of introducing one more; for this we are obliged to the attention of *John Lloyd Esq. of Gwig Fair*,

who discovered it in a copy of *Ray's Synopsis Pisc.* which had belonged to Mr. *Lewis Morris*; this gentleman was elder brother of Mr. *William Morris*, who presented the specimen the subject of this paper to Mr. *Pen-
nant*. Mr. *Lewis Morris* has made a figure of it, rather rude indeed, but characteristic, as his description will also be found to be. His words are, " This fish I found in the month of
" *January* 1745, in *Penrhyn Dyfi*, just left
" by the tide, and alive. It was in length five
" inches; and about one tenth of an inch wide,
" as transparent almost as glass; its thickness
" at the back and belly, about one sixth of its
" breadth; and all its bones appeared as in
" the cut, with small black spots from one end
" to the other."* E.D.

* The above memorandum is preserved in the copy of the *British Zoology*, in the invaluable library of the President of the Royal Society in *Soho Square*. E.D.

GENUS XXII. SWORD FISH.

JAW upper, extending to a great length, hard, slender, and pointed.

TEETH none.

RAYS branchiostegous seven.

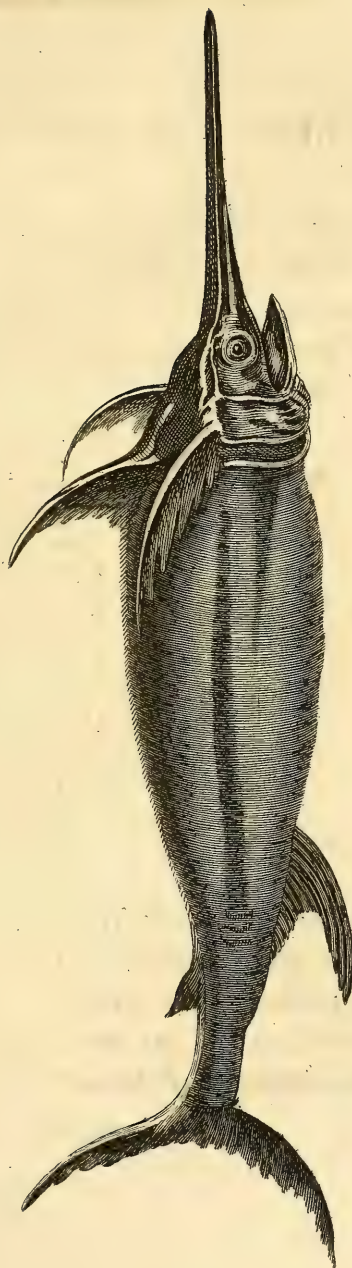
BODY slender.

- | | |
|--|--------------------------------------|
| 1. SICILIAN. <i>Enphias</i> . <i>Arist. Hist. an. lib.</i> | Schwert fische. <i>Schonevelde</i> , |
| ii. c. 13. viii. c. 19. <i>Oppian</i> | 35. Sword Fish. <i>Wil. Ichth.</i> |
| <i>Halieut. lib.</i> ii. 462. iii. | 161. <i>Raii Syn. pisc.</i> 52. |
| 442. | <i>Xiphias. Arted. Synon.</i> 47. |
| <i>Xiphias. Ovid Halieut.</i> 97. | <i>Xiphias Gladius. Lin. Syst.</i> |
| <i>Xiphias, i. e. Gladius. Plinii</i> | 432. <i>Gm. Lin.</i> 1149. |
| <i>lib.</i> xxxii. c. 2.* | Swerd-fisk. <i>Faun. Suec.</i> No. |
| L'Heron de mer, ou grand | 303. |
| Espadaz. <i>Belon</i> , 102. | L'empereur. <i>Bloch ichth.</i> iii. |
| <i>Xiphias. Rondel.</i> 251. | 23. <i>tab.</i> 76. |
| <i>Xiphias, i. e. Gladius piscis.</i> | Le <i>Xiphias espadon De la</i> |
| <i>Gesner pisc.</i> 1049. <i>Cuii</i> | <i>Cepede Hist. des Poissons.</i> |
| <i>opusc.</i> 104. | ii. 289. |

THIS fish sometimes frequents our coasts, but is much more common in the *Mediterranean* sea, especially in the part that separates *Italy* from *Sicily*, which has been long celebrated for it: the promontory *Pelorus*,† now *Capo di Faro*,

† *Athenæus*, 314.

SWORD - FISH.



was a place noted for the resort of the *Xiphias*, and possibly the station of the *speculatores*, or the persons who watched and gave notice of the approach of the fish.

One was taken in *October* 1785, in the new cut for the *Dee* above *Flint*, nearly at the same time with the Beaked Whale.

The antient method of taking them is particularly described by *Strabo*,* and agrees exactly with that practised by the moderns. CAPTURE.

A man ascends one of the cliffs that overhang the sea: as soon as he spies the fish, he gives notice either by his voice, or by signs, of the course it takes. Another, that is stationed in a boat, climbs up the mast, and on seeing the sword fish, directs the rowers towards it. As soon as he thinks it is within reach, he descends, and taking a spear in his hand, strikes it into the fish, which, after wearying itself with its agitation, is seized and drawn into the boat. It is much esteemed by the *Sicilians*, who buy it up eagerly, and at its first coming into season give about sixpence *English* per pound. The season lasts from *May* till *August*.† The antients used to cut this fish into pieces, and

* *Lib. i. p. 16.*

† *Ray's Travels, i. 271.*

salt it, whence it was called *Tomus Thurianus*,* from *Thurii*, a town in the bay of *Tarentum*, where it was taken and cured.

Kircher, in his *Musurgia*, has preserved a strange incantation used by the *Sicilian* fishermen, at the capture of the *Pesce Spada*, as they call it, which is expressed in the following unintelligible jargon :

Mamassu di pajanu,
Paletta di pajanu,
Majussu di stignela,
Palettu di paenu pale,
Pale la stignetta,
Mancuta stigneta.
Pro nastu, vardu, pressu da
Visu & da terra.

But this use of charmed words is not confined to *Sicily*; the *Irish* have their song at the taking of the razor shell, and the *Cornish* theirs, at the taking of the whistle fish.

The sword fish is said to be very voracious, and a great enemy to the Tunny, which (according to *Belon*) is as much terrified with it as sheep are at the sight of a wolf.

*Ac durus Xiphias, ictu non mitior ensis;
Et pavidæ magno fugientes agmine Thunni.*

Ovid. Halieut. 97.

* *Tomus Thurianus, quem alii Xiphiam vocant.* Plinii lib. xxxii. c. 11.

Sharp as a sword the *Xiphias* does appear;
And crowds of flying *Tunnies* struck with fear.

It grows to a very large size; the head of one, with the pectoral fins, found on the shore near *Laugharn*, in *Caermarthenshire*, alone weighing seventy-five pounds: the snout was three feet long, rough, and hard, but not hard enough to penetrate ships and sink them, as *Pliny* pretends.*

DESCRIP-
TION.

The snout is the upper jaw, produced to a great length, and has some resemblance to a sword, from whence the name; it is compressed at the top and bottom, and sharp at the point; the under jaw is four times as short as the upper, but likewise sharp pointed; the mouth is destitute of teeth. The body is slender, thickest near the head, and growing less and less as it approaches the tail; the skin is rough, but very thin; the color of the back is dusky, of the belly silvery; the dorsal fin begins a little above the gills, and extends almost to the tail; it is highest at the beginning and the end, but very low in the middle; a little above the tail, on each side, the skin rises and forms two triangular protuberances, not unlike the spu-

* *Xiphiam, id est, Gladium, rostro mucronato esse, ab hoc naues perfossas mergi in oceano. Plin. Lib. xxxii. c. 11.*

rious fins of the tunny; the pectoral fins are long, and of a scythe-like form, and their first rays the longest; the anus is placed at the distance of one-third part of the body from the tail; beneath are two anal fins; the tail is exactly of the shape of a crescent.

SECT. II.

JUGULAR.

GENUS XXIII. DRAGONET.

LIP upper, doubled.

EYES near each other.

APERTURES breathing two on the hind part of the head.

RAYs first of the dorsal fin very long.

La tierce espece de Exocetus?	<i>Gm. Lin.</i> 1151. <i>Faun. Suec.</i>	1. GEMME-
<i>Belon</i> , 218,	No. 110.	OUS.
Dracunculus. <i>Rondel.</i> 304.	Uranoscopus. <i>Gronov. Zooph.</i>	(MALE.)
Dracunculus, aranei species	No. 206.	
altera. <i>Gesner pisc.</i> 80.	Floy-fiske. <i>Pontop. Norway</i> ,	
Dragon fish. <i>Marten's Spitz-</i>	ii. iii.	
<i>berg.</i> 123.	Dracunculus marinus. <i>Borlase</i>	
Yellow Gurnard. <i>Ph. Trans.</i>	<i>Cornwall</i> , 270. <i>Seb. Mus.</i>	
No. 293.	iii. 92. <i>tab.</i> 20. <i>fig.</i> 7.	
Lyra Harvicensis. <i>Pet. Gaz.</i>	<i>Neill in Mem. Wern. Soc.</i> 529.	
<i>tab.</i> 22. <i>Dale Harwich</i> ,	La Lacert. <i>Bloch ichth.</i> v. 67.	
431.	<i>tab.</i> 161.	
Callionymus Lyra. C. dorsalis	Le Callionyme Lyre. <i>De la</i>	
prioris radiis longitudine	<i>Cepede Hist. des Poissons</i> ,	
corporis. <i>Lin. Syst.</i> 433.	ii. 329.	

LINNÆUS has given this genus the name of *NAME.*
Callionymus, a fish mentioned by several of the

antients, but the notices they have left of it are so very slight, as to render it difficult to determine what species they intended. * *Pliny* makes it a synonym to the *Uranoscopus*, a fish frequent in the *Italian* seas, but very different from our Dragonet, a name we have taken the liberty of forming, from the diminutive *Dracunculus*, a title given it by *Rondeletius*, and other authors. The *English* writers have called it the Yellow Gurnard, but having no one character of the Gurnard genus, we think ourselves obliged to drop that name.

It is found as far north as *Norway*† and *Spitzbergen*, and as far south as the *Mediterranean* sea, and is not unfrequent on the *Scarborough* coasts, where it is taken by the hook in thirty or forty fathoms water. It is often found in the stomach of the Cod-fish.

DESCRIP-
TION.

This species grows to the length of ten or twelve inches; the body is slender, round, and smooth; the head is large, and flat at the top; in the hind part are two orifices, through which

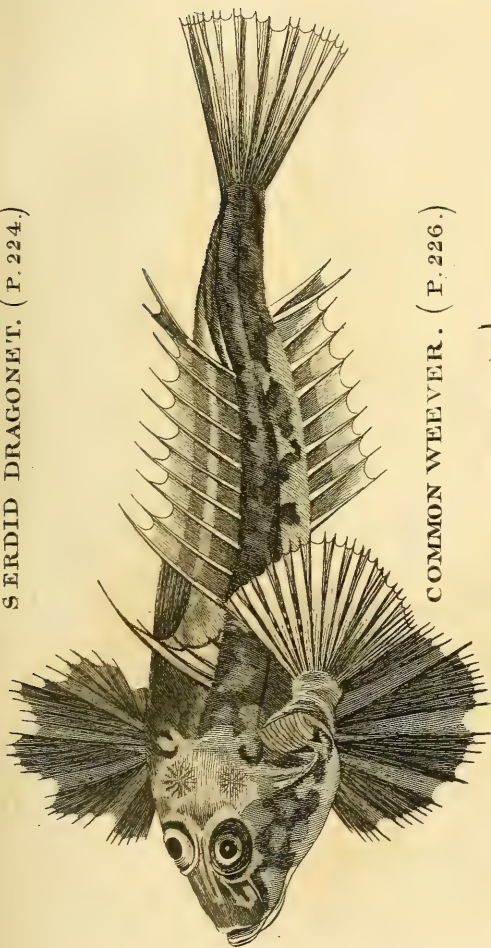
* *Lib.* xxxii. c. 11.

† We have received it, with other curiosities, from that well-meaning prelate, *Erich Pontoppidan*, Bishop of *Bergen*. He was also Vice-Chancellor of the University of *Copenhagen*, in which station he died, *December* 20th, 1764, aged 66, much respected by his countrymen.

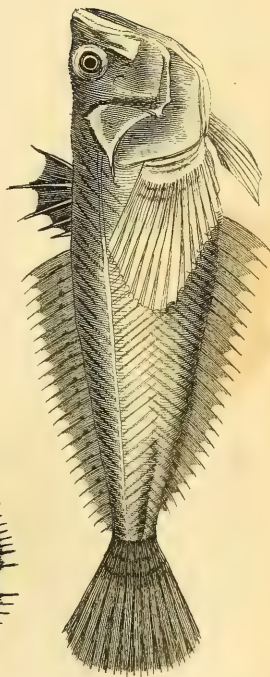
GEMMEOUS DRAGONET.



SERDID DRAGONET. (P. 224.)



COMMON WEEVER. (P. 226.)



it breathes, and also forces out the water it takes in at the mouth, in the same manner as the cetaceous fishes. The apertures to the gills are closed; on the end of the bones that cover them is a very singular trifurcated spine. The eyes are large, and placed very near each other on the upper part of the head, so that they look upwards; for which reason it has been ranked among the *Uranoscopi*; the pupils are of a rich sappharine blue, the irides of a fine fiery carbuncle; the upper jaw projects much farther than the lower; the mouth is very wide; the teeth are small; the pectoral fins are round, and of a light-brown color; the ventral placed before them, are very broad, and consist of five branched rays. The first dorsal fin is very singular, the first ray being setaceous, and so long as to extend almost to the tail; those of the second dorsal fins are of a moderate length, except the last, which is produced far beyond the others. The anus is placed about the middle of the belly; the anal fin is broad, and the last ray the longest. *Pontoppidan* calls this species the flying fish; whether it makes use of any of its fins to raise itself out of the water, as he was informed it did, we cannot pretend to say. The tail is rounded and long, and consists of ten rays. The side line is strait; the colors

are yellow, blue, white, and make a beautiful appearance when the fish has been just taken; the blue is of an inexpressible splendor, the richest cærulean glowing with a gemmeous brilliancy; the throat is black; the membranes of all the fins extremely thin and delicate.

- | | | |
|--------------|--|--|
| * 2. SORDID. | Dracunculus. <i>Wil. Ichth.</i> 136. | 434. <i>Gm. Lin.</i> 1152. |
| (FEMALE.) | <i>Raii Syn. pisc.</i> 79. | Le Doucet. <i>Bloch ichth.</i> v. |
| | Cottus pinna secunda dorsi alba. <i>Arted. Synon.</i> 77. | 71. <i>tab.</i> 162. <i>f.</i> 2. |
| | Callionymus Dracunculus. C. dorsalis prioris radiis corpore brevioribus. <i>Lin. Syst.</i> | Le Callionyme dragoneau. <i>De la Cèpede Hist. des Poissons</i> , ii. 335. |

DESCRIP-
TION.

THIS species we received from Mr. *Travis*. Its length was only six inches and an half. The head was compressed; the forehead sloped down to the nose, being not so level as that of the preceding; the eyes large, and almost contiguous; the mouth small; the teeth very minute; over the gills was a strong trifurcated broad spine.

* Mr. *Neill*, at p. 529 of the *Memoirs of the Wernerian Society*, states, that he has examined several dozens of the Dragonets, which were taken promiscuously on the same lines, in the *Frith of Forth*, that the gemmeous were uniformly milners, and the sordid, spawners, hence he reasonably concludes that they are only male and female of the same species. The Dragonet is common near the mouth of the *Frith of Forth*, and is frequently caught, in water from twelve to twenty fathoms deep, on the Haddock lines, which are baited with muscles. ED.

The first dorsal fin had four rays ; the first ray setaceous, extending a little higher than the others, the last very short ; the two first rays and webs were yellow, the others black ; the second dorsal had ten soft rays, their ends extending beyond the webs, which were pellucid ; the pectoral fins consisted of twenty rays, and were ferruginous, spotted with a deeper cast of the same ; the ventral fins consisted of five broad and much branched rays, like those of the first species ; the anal fin was white, and had ten rays ; the tail had ten rays. In both species they are bifurcated at their ends, and the ray next the anal fin in both is very short. In colors this is far inferior to the former, being of a dirty yellow, mixed with white and dusky spots ; the belly is entirely white.

GENUS XXIV. WEEVER.

JAW lower, sloping down.

GILL COVERS aculeated.

RAYS branchiostegous, six.

FINS dorsal, two.

ANUS near the breast.

- I. COMMON. *Δρακων*? *Arist. Hist. an. Lib.*
 viii. c. 13. *Ælian. Hist. an.*
Lib. ii. c. 50. *Oppian Hal-*
lieut. ii. 459. *Trachinus Draco. Lin. Syst.*
 453. *Gm. Lin.* 1157. *Gro-*
nov. Zooph. No. 274.
Draco marinus. Plinii Lib. ix.
 c. 27. *Draco, Dracunculus.*
Lib. xxxii. c. 11. *Araneus.*
Lib. ix. c. 48. *Farsing, Fiassing. Faun. Suec.*
 No. 305.
La petite Vive. Duhamel Tr.
des Pesches. iii. 135. *sect.*
6. tab. 1. fig. 21.
La Vive. Bloch ichth. ii. 119.
tab. 61.
Peter-manniken, Schwertfis-
che. Schonevelde, 16. *La Trachine vive. De la Ce-*
pede Hist. des Poissons,
 ii. 354.
The Weever. Wil. Ichth. 238.
Raii Syn. pisc. 91.
Trachinus maxilla inferiore

THE qualities of this fish were well known to the antients, who take notice of them without any exaggeration: the wounds inflicted by its spines are exceedingly painful, attended with a

violent burning, and most pungent shooting, and sometimes with an inflammation that will extend from the arm to the shoulder.* It is a common notion that these symptoms proceed from something more than the small wound this fish is capable of inflicting; and that there is a venom infused into it, at least such as is made by the spines that form the first dorsal fin, which is dyed with black, and has a most suspicious aspect. The remedy used by a fisherman in our neighbourhood is the sea sand, with which he rubs the place affected for a considerable time.† At *Scarborough*, stale urine, warmed, is used with success.

This fish buries itself in the sands, leaving only its nose out, and, if trod on, immediately strikes with great force; and we have seen it direct its blows with as much judgment as a fighting cock.

* It is probable that the malignity of the symptoms arises from the habit of body the person is in, or the part in which the wound is given.

† In the *Universal Museum* for November 1765, is an instance of a person who was reduced to great danger by a wound from this fish, and who was cured by the application of sweet oil, and taking *opium* and *Venice treacle*.

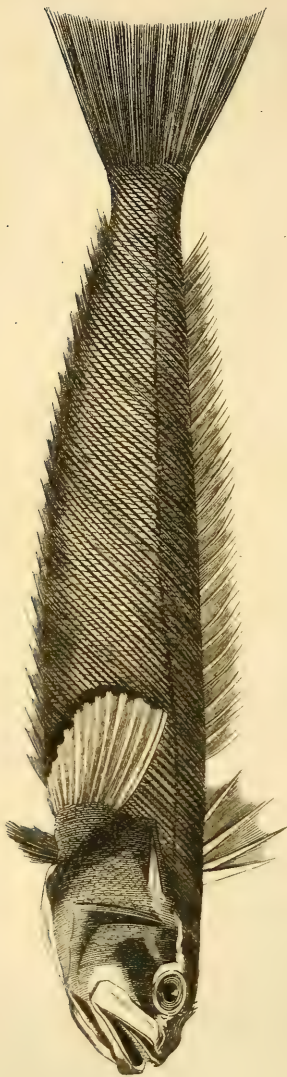
[We may add, on the authority of the reverend *Hugh Davies*, that a cure may be effected by the application of the liver of the Weever to the wound. Ed.

The *English* name seems to have no meaning, being corrupted from the *French*, *la vive*, so called as being capable of living long out of the water, according to the interpretation of *Belon*.

DESCRIP-
TION.

It grows usually to the length of five inches. The irides are yellow; the under jaw is longer than the upper, and slopes very much towards the belly; the teeth are small; the eyes prominent; the back is strait; the sides flat; the belly prominent; the lateral line strait; the covers of the gills are armed with a very strong spine. The first dorsal fin consists of five very strong spines, which, as well as the intervening membranes, are tinged with black; this fin, when quiescent, is lodged in a small hollow; the second consists of several soft rays, commences just at the end of the first, and continues almost to the tail; the pectoral fins are broad and angular; the ventral fins small. The vent is placed remarkably forward, very near the throat; the anal fin extends to a small distance from the tail, which is a little hollowed in the middle, but not so much as to be called forked. The gills and top of the head are of a silvery brightness; the first striped, the last spotted with yellow. The whole body is semi-pellucid and silvery; the back marked with interrupted lines of yellow; beneath that, and

GREATER WEEVER.



above the lateral line, is a continued one of the same color; beneath the side line is a faint tinge of yellow; from the back to the belly, are numerous lines of a zigzag form. The tail is light yellow, marked with black at the end.

Draco major seu araneus. Sal- *La Vive. Duhamel Tr. des 2. GREATER.*
vian. 70. 2. *Pesches, iii. 134. sect. 6.*
Greater Weever. Tourin Scot- *tab. 1. fig. 1.*
land. 1769. p. 27.

THE eyes are large; the irides golden; under jaw longer than the upper; before each eye are two short spines; on each gill-cover, is a strong and very sharp pellucid spine. The first dorsal fin has five sharp spines; the connecting webs of the three first black; the second dorsal fin extends almost to the tail, and has thirty-one soft rays; the anal fin, thirty-two, thick and soft, the ends reaching beyond the webs, and hooked; the pectoral fins pale red. On the base of the tongue and on the palate, is a series of small teeth. The tail is slightly lunated. The color of the head and back cinereous; the former marked with dusky spots; the gill-covers striped with yellow. The scales are very small, and run singularly in oblique rows to the belly; the sides are marked with oblique lines of dull

DESCRIP-
TION.

yellow mixed with faint blue, pointing to the belly, which is white; the tail striped like the sides. The body is nearly of an equal depth, namely, about two inches. The length of a large one is about sixteen inches; its weight two pounds.

This species is found in the sea off *Scarborough*, but most frequently in that off *Bright-helmstone*, where it is the dread of the fishermen, who instantly cut away the spines. It is a firm and well tasted fish.

GENUS XXV. COD FISH.

HEAD smooth.

RAYs branchiostegous seven, or eight, slender.

BODY oblong; scales deciduous.

FINS covered with a common skin.

FINS ventral, slender, and ending in a point.

TEETH in the jaws; and in the palate, a series of minute teeth closely set together.

* With three dorsal fins; the chin bearded.

La Morue. *Belon*, 121.

Molva. *Rondel*, 280.

Molva sive morhua altera.

Gesner pisc. 88.

Kablauw. *Schonevelde*, 18.

Asellus major vulgaris. *Wil.*
Ichth. 165.

Cod-fish, or Keeling. *Raii*

Syn. pisc. 53.

Gadus dorso tripterygio, ore
cirrato, cauda æquali fere
cum radio primo spinoso.

Arted. Synon. 35.

Gadus Morhua. *Lin. Syst.* 1. COMMON.

436. *Gm. Lin.* 1162. *Gro-*

nov. Zooph. No. 319.

Arct. Zool. Int. cccliii.

Cabblia. *Faun. Suec.* No. 398.

La Morue. *Duhamel Tr. des*
Pesches, ii. 37. *tab.* 4—12
—19.

La Morue. *Bloeh ichth.* ii.
131. *tab.* 66.

De la Cepede Hist. des Pois-
sons, ii. 369.

THIS fish is found only in the northern part of the world; it is, as *Rondeletius* calls it, an

ocean fish, and never met with in the *Mediterranean* sea.* It affects cold climates, and seems confined between the latitudes 66° and 50° : those caught north and south of those degrees being either few in quantity, or bad in quality. The *Greenland* fish are small and emaciated through want of food, being very voracious, and having in those seas a dearth of provision. This locality of situation is common to many other species of this genus, most of them being inhabitants of the cold seas, or such as lie within zones that can just clame the title of temperate. There are, nevertheless, certain species found near the *Canary Islands*, called *Cherny*,† of which we know no more than the name; but according to the unfortunate Captain *Glass*, are better tasted than the *Newfoundland* kind.

The great rendezvous of the cod fish is on the banks of *Newfoundland*, and the other sand banks which lie off the coasts of *Cape Breton*, *Nova Scotia*, and *New England*. They prefer those situations, on account of the quantity of worms produced in those sandy bottoms, which tempt them to resort there for food: but another

* None (says Captain *Armstrong* in his history of *Minorca*) of the *Aselli* or cod fish kind, frequent our shores, p. 163.

† *Hist. Canary Islands*, 198.

cause of the particular attachment the fish have to these spots, is their vicinity to the polar seas, where they return to spawn; there they depose their roes in full security, but want of food forces them, as soon as the first more southern seas are open, to repair thither for subsistence.

Few are taken north of *Iceland*, but on the south and west coast they abound: they are again found to swarm on the coasts of *Norway*, in the *Baltic*, off the *Orkney* and the *Western Isles*; after which their numbers decrease, in proportion as they advance towards the south, when they seem quite to cease before they reach the mouth of the Straits of *Gibraltar*.

Before the discovery of *Newfoundland*, the greater fisheries of cod were on the seas of *Iceland*, and off our *Western Isles*, which were the grand resort of ships of all the commercial nations; but it seems that the greatest plenty was met with near *Iceland*. The *English* resorted thither before the year 1415; for we find that *Henry V.* was disposed to give the king of *Denmark* satisfaction for certain irregularities committed on those seas by his subjects. In the reign of *Edward IV.* the *English* were excluded from the fishery by treaty; and forbidden to resort there under pain of forfeiture of life and goods. Notwithstanding this, our mo-

narch afterwards gave licence to a ship of *Hull* to sail to *Iceland*, and there relade fish and other goods, without regard to any restrictions to the contrary. Our right in later times was far from being confirmed, for we find Queen *Elizabeth* condescending to ask permission to fish in those seas from *Christian IV.* of *Denmark*, yet afterwards she so far repented her request, as to instruct her ambassadors to that court, to insist on the right of free and universal fishery.* How far she succeeded, I do not know, but it appears, that in the reign of her successor, our countrymen had not fewer than a hundred and fifty ships employed in the *Iceland* fishery. I suppose this indulgence might arise from the marriage of *James* with a Princess of *Denmark*. But the *Spanish*, the *French*, and the *Bretons*, had much the advantage of us in all fisheries at the beginning, as appears by the state of that in the seas of *Newfoundland* in the year 1578, † when the number of ships belonging to each nation stood thus :

Spaniards, 100, besides 20 or 30 that came from *Biscay*, to take whale for train, being about five or six thousand tons.

Portuguese, 50, or three thousand tons.

* *Rymer's Fæd.* XVI. 275, 425.

† *Hackluyt's Coll. Voy.* III. 132.

French and *Bretons*, 150, or seven thousand tons.

English, from 30 to 50.

Mr. *Anderson*, in his Dictionary of Commerce, I. 363, says, that the *French* began to fish there as early as 1536; and we think we have somewhere read, that their first pretence for fishing for cod in those seas, was only to supply an *English* convent with that article.

The increase of shipping that resort to those fertile banks, is now unspeakable: our own country still enjoys the greatest share, which ought to be esteemed our chiefest treasure, as it brings wealth to individuals, and strength to the state.

All this immense fishery is carried on by the hook and line only; * at first the fishermen use pork or bits of sea fowl for a bait; but as they proceed, they supply themselves with shell fish, called *Clams*, which are found in the belly of the cod; the next bait is the lobster; after that the herring and the launce, which last till

* We have been informed that they fish from the depth of fifteen to sixty fathoms, according to the inequality of the *Bank*, which is represented as a vast mountain, under water, above five hundred miles long, and near three hundred broad, and that seamen know when they approach it by the great swell of the sea, and the thick mists that impend over it.

June, when the *Capelan** comes on the coast, which lasts till *August*, when the herring is employed again for the purpose. With these are caught fish sufficient to find employ for nearly fifteen thousand *British* seamen, and to afford subsistence to a much more numerous body of people at home, who are engaged in the various manufactures which so vast a fishery demands.

The food of the cod is either small fish, worms, crustaceous, or testaceous animals, such as crabs, large whelks, &c. and their digestion is so powerful, as to dissolve the greatest part of the shells they swallow. They are very voracious, and catch at any small body they perceive moved by the water, even stones and pebbles, which are often found in their stomachs.

THE SOUNDS. Fishermen are well acquainted with the use of the air-bladder or *sound* of the cod, and are very dexterous in perforating this part of a live fish with a needle, in order to disengage the inclosed air; for without this operation it could not be kept under water in the well-boats, and brought fresh to market. The sounds of the

* *Le Lodde. Bloch ichth. xi. 80. tab. 381. fig. 1.* This species of Salmon, the *Capelan* of *America*, must not be confounded with the fish of the same name, which is found in the *Mediterranean*, and is the Power Cod fish of this work. ED.

cod salted is a delicacy often brought from *Newfoundland*. Isinglass is also made of this part ISINGLASS. by the *Iceland* fishermen: as the process may be of service to instruct the natives of the North of *Scotland* where these fish are plentiful, I beg leave to give it in the Appendix,* extracted from a useful paper on the subject, in the *Philosophical Transactions* of 1773, by *Humphrey Jackson, Esq.*

Providence hath kindly ordained, that this VASTLY
PROLIFIC. fish, so useful to mankind, should be so very prolific as to supply more than the deficiencies of the multitudes annually taken. *Leewenhock* counted nine millions three hundred and eighty-four thousand eggs in a cod fish of a middling size, a number surely that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean, to exterminate, and which will secure to all ages an inexhaustible supply of grateful provision.

In our seas they begin to spawn in *January*, and deposit their eggs in rough ground, among rocks. Some continue in roe till the beginning of *April*. The cod fish in general recovers quicker after spawning than any other fish, therefore it is common to take some good ones all the summer. When they are out of season they

* No. III.

are thin tailed and lousy, and the lice chiefly fix themselves on the inside of their mouths.

Fish of a middling size are most esteemed for the table, and are chosen by their plumpness and roundness, especially near the tail, by the depth of the *sulcus* or pit behind the head, and by the regular undulated appearance of the sides, as if they were ribbed. The glutinous parts about the head lose their delicate flavor after it has been twenty-four hours out of the water, even in winter, in which these and other fish of this genus are in highest season.

SIZE. The largest we ever heard of on our coasts, weighed seventy-eight pounds, the length was five feet eight inches; and the girth round the shoulders five feet; it was taken at *Scarborough* in 1755, and was sold for one shilling. But the general weight of these fish in the *Yorkshire* seas, is from fourteen to forty pounds.

DESCRIPTION. This species is short in proportion to its bulk, the belly being very large and prominent. The jaws are of an equal length, at the end of the lower is a small beard; the teeth are disposed in the palate as well as the jaws; the eyes are large. On the back are three soft fins; the first has fourteen, the two last nineteen rays each; the ventral fins are very slender, and consist but of six rays; the two first extend-

ing far beyond the other ; it has two anal fins ; the first consisting of twenty, the last of sixteen rays. The tail is almost even at the end ; the first ray on each side is short, and composed of a strong bone. The color of this fish is cinereous on the back and sides, and commonly spotted with yellow ; the belly is white, but they vary much, not only in color* but in shape, particularly that of the head. The side line is white and broad, strait, till it reaches opposite the vent, when it bends towards the tail.†

Gadus varius aut striatus.	Asillus varius vel striatus. 2. VARIABLE.
<i>Schonfield in Raii Syn.</i>	<i>Wil. ichth.</i> 172. tab. L. 1.
<i>Pisc.</i> 54.	<i>fig.</i> 1.
<i>Ascan. Scon.</i> 27.	<i>Raii syn. pisc.</i> 54.
Gadus Callarias. <i>Gm. Lin.</i>	De Dorset. <i>Muller.</i> iv. 80.
1160.	<i>Faun. Groenl.</i> 144.
<i>Faun. Suec.</i> 307.	Le Dorset. <i>Bloch Ichth.</i> ii.
Gadus dorso tripterygio, ore	128. tab. 63.
cirrato, colore vario, maxilla	Le Gade Callarias. <i>De la</i>
superiore longiore, cauda	<i>Cepede Hist. des Poissons.</i>
æquali. <i>Arted. Gen.</i> 20.	ii. 409.
<i>Syn.</i> 35.	

[IN Mr. Pennant's copy of the *British Zoology*, is the following short note, with a reference to

* Codlings are often taken of a yellow, orange, and even red color, while they remain among the rocks, but on changing their place assume the color of other cod fish.

† *De la Cepede* in the second volume of the *Histoire des*

Ray and *Ascanius*: “ We have the *Gadus Cal- larias* very common on our coasts.” From what quarter this intelligence was communicated, we are ignorant ; but as the fish is common in the Northern seas, and the *Baltic*, it does not seem improbable, that it frequently visits the coasts of this island, and has been confounded with the common Codfish to which it bears a considerable resemblance. *Bloch* considers its distinctive character to consist in the breadth of the lateral line, and its being marked with spots. The head is smaller than that of the Hadock ; the mouth large, furnished in the upper jaw with several rows of teeth ; on the lower, which is shortest, is a single row ; on the chin is a single beard ; the eyes large

DESCRIP-
TION.

Poissons, p. 393, speaks of a Red or Rock Codfish, found off the *Isle of Man*, as a variety of the common Codfish, but in the Supplement, p. 673, he gives it on the authority of Monsieur *Noel*, as a distinct species. He says it is very common on the Western isles of *Scotland*, where it grows to the length of forty inches ; that the belly is large ; the head long ; the teeth small and sharp ; the chin bearded ; a groove on the top of the head ; the tail elevated ; the lateral line white, and bent. He also adds another under the name of *Le Gade negre*, caught off the isle of *Bute*, in the *Solway* frith, and in the *Mersey*, near *Liverpool*. His description is short ; he merely says, it grows to the length of eight inches or a foot ; the lower jaw longest, and provided with a beard ; two long filaments distinguish each ventral fin ; and that the first dorsal consists only of one ray which is jointed. ED.

and round; the body covered with minute soft scales. The general color of the upper part of the body is grey spotted with brown, that of the under part white; but it is observed, that these tints, particularly the color of the spots, vary extremely according to age or season: the few spots on the head become in winter nearly black, and occasionally a red tinge extends over the back and fins. Its flesh is tender and good, but sometimes appears of a green color.

Its usual weight does not exceed two pounds, but there are instances of its weighing from eight to fourteen pounds. ED.

Aigrefin, ou aiglefin. *Belon*
118.

Tertia asellorum species. Ron-
del. 277.

Tertia asel. Sp. Eglesinus.
Gesner pisc. 86.

Onos sive asinus veterum.
Turner epist. ad Gesner.

Asellus minor, Schelfisch.
Schonevelde 18.

Hadock. Wil. Ichth. 170.
Raii syn. pisc. 55.

Gadus dorso tripterygio, ore
cirrato, max. sup. longiore,
corpore albicante, cauda

parum bifurca. Arted. synonym. 3. HADOCK.
36.

Gadus Æglefinus. G. tri-
pterygius cirratus albicans,
cauda biloba. Lin. syst. 435.
Gm. Lin. 1159.

Kolja. Faun. Suec. No. 306.
Gronov. Zooph. No. 321.

L'Anon. Duhamel Tr. des
Pesches. ii. 133. tab. 23.
fig. 1.

L' Aigrefin. Bloch ichth. ii.
125. tab. 62.

De la Cepede Hist. des Pois-
sons. ii. 397.

OUR countryman *Turner* conjectured this species to have been the *Ovos*, or *Asinus*, of the

NAME.

antients, and *Belon* that it was the *Κεῖδος*, and the *Πρόβατος* of *Oppian*. We have carefully consulted most of the antient naturalists, but cannot discover any marks by which we can determine the species they intended. The words **Ovos*, †*Asinus*, *Asellus*, ‡*Callarias*, and *Bacchus* are familiarly applied to several of our species of cod fish by the more modern writers; yet the antients, from whom they are borrowed, have not authorized the application to any particular kind, either by description or any other method. Different reasons have been assigned for giving the name of *Ovos*, or *Asinus*, to this species, some imagining it to be from the color of the fish, others because it used to be carried on the backs of asses to market; but we shall drop this uncertain subject, and proceed to what we have fuller assurance of.

SEASON.

Large hadocks begin to be in roe the middle of *November*, and continue so till the end of *January*; from that time till *May* they are very thin tailed, and much out of season. In *May* they begin to recover, and some of the middling-sized fish are then very good, and continue im-

* *Arist. Hist. an. Lib. viii. c. 15.* *Oppian Halieut. I. 151.*
III. 191.

† *Ovidii Halieut. Lin. 131.* *Plinii Lib. IX. c. 16. 17.*

‡ *Lib. c. 17.*

proving till the time of their greatest perfection. The small ones are extremely good from *May* till *February*, and some even in *February*, *March*, and *April*, viz. those which are not old enough to breed. The fishermen assert, that in rough weather hadocks sink down into the sand and ooze in the bottom of the sea, and shelter themselves there till the storm is over, because in stormy weather they take none, and those that are taken immediately after a storm are covered with mud on their backs. In summer they live on young herrings and other small fish; in winter on the stone-coated worms,* which the fishermen call *hadock meat*.

FOOD.

The grand shoal of hadocks comes periodically on the *Yorkshire* coasts. It is remarkable that they appeared in 1766 on the 10th of *December*, and exactly on the same day in 1767: these shoals extended from the shore near three miles in breadth, and in length from *Flamborough* head to *Tinmouth* castle, and perhaps much farther northwards. An idea may be given of their numbers by the following fact: Three fishermen, within the distance of a mile from *Scarborough* harbour, frequently loaded their *coble* or boat with them twice a-day, taking each time about a ton of fish: when they put

VAST
SHOALS.* A species of *Serpula*.

down their lines beyond the distance of three miles from the shore, they caught nothing but dog fish, which shows how exactly these fish keep their limits. The best haddocks were sold from eightpence to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a halfpenny per score. * The large haddocks quit the coast as soon as they go out of season, and leave behind great plenty of small ones. It is said that the large ones visit the coasts of *Hamburgh* and *Jutland* in the summer.

It is no less remarkable than providential, that all kinds of fish (except mackrel) which frequent the *Yorkshire* coast, approach the shore, and as if it were offer themselves to us, generally remaining there as long as they are in high season, and retire from us when they become unfit for use.

It is the commonest species in the *London* markets.

DESCRIP-
TION.

They do not grow to a great bulk, one of fourteen pounds being of an uncommon size, but those are extremely coarse; the best for the table weighing from two to three pounds. The

* Here Mr. *Travis*, to whom I am much obliged for a most accurate account of the *Yorkshire* fish, with great humanity projects an inland navigation, to convey at a cheap and easy method, those gifts of Providence to the thousands of poor manufacturers who inhabit the distant parts of that vast county.

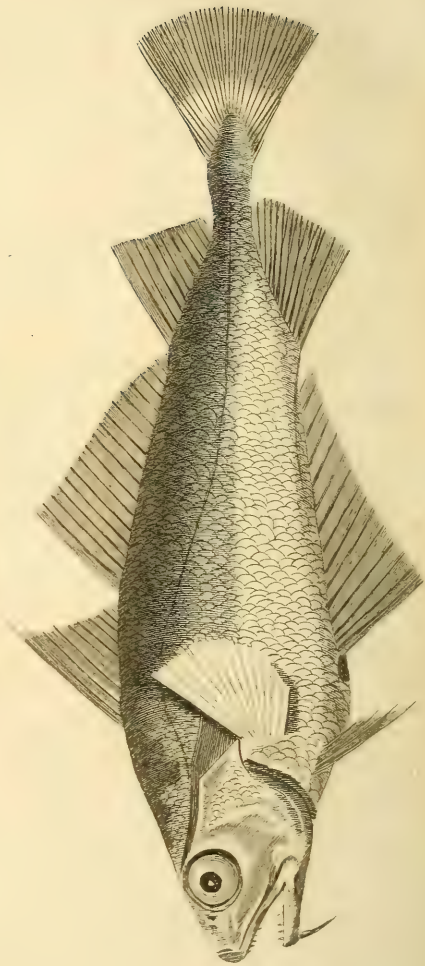
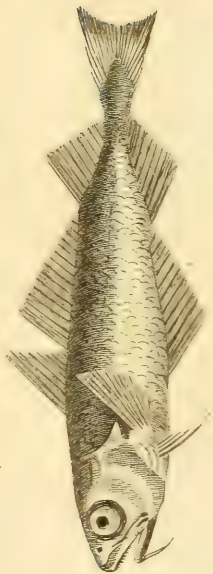
body is long, and rather more slender than that of the common codfish; the head slopes down to the nose; the space behind the hind part of the first dorsal fin is ridged; on the chin is a short beard. On the back are three fins resembling those of the common codfish; on each side beyond the gills is a large black spot. Superstition assigns this mark to the impression St. *Peter* left with his finger and thumb when he took the tribute out of the mouth of a fish of this species, which has been continued to the whole race of hadocks ever since that miracle. The lateral line is black; the tail is forked. The color of the upper part of this species is dusky or brown; the belly and lower part of the sides silvery; the irides silvery; the pupil large and black.

4. POUT. *Asellus mollis latus.* Mr. *Lin. syst.* 437. *Gm. Lin.*
Lister apud Wil. Ichth. 1163.
App. 22. *Gronov. Zooph.* No. 320.
 Whiting Pout, *Londinensibus.* *Sma-Torsk. Faun. Suec.* No.
Raii syn. pisc. 55. 311.
Gadus dorso tripterygio, ore *Le Tacaud. Duhamel Tr. des*
cirrato, longitudine ad lati- *Pesches.* ii. 136. *tab.* 23.
tudinem tripla, pinna ani *fig.* 2.
prima ossiculorum triginta. *Le Molle. Bloch ichth.* v. 87.
Arted. synon. 37. *tab.* 166.
Faun. Groenl. 146. *Le Gade Tacaud. De la Ce-*
Gadus barbatus. G. triptery- *pede Hist. des Poissons.* ii.
gius cirratus maxilla inferi- 413.
ore punctis utrinque septem.

DESCRIP-
TION.

THIS species never grows to a large size, seldom exceeding a foot in length. It is distinguished from all others by its great depth; one of the size abovementioned being nearly four inches deep in the broadest part. The back is very much arched, and carinated; the scales larger than those of the common codfish; the mouth small; the beard short; on each side of the lower jaw are seven or eight punctures. The first dorsal fin is triangular, and terminates in a long fibre: the color of the fins and tail black; at the bottom of the pectoral fins is a black spot; the lateral line is white, broad, and crooked; the tail is even at the end, and of a dusky color. The color of the body is white, but

POWER COD FISH. (P. 249)



more obscure on the back than the belly, and tinged with yellow.

It is called at *Scarborough* a *Kleg*. It is a very delicate fish.

Bib & Blinds *Cornubiensibus*,
Wil. Ichth. 169.

setam producto. *Arted. synon.* 35.

5. BIB.

Asellus luscus. *Raii syn. pisc.*
54.

Gadus luscus. *Lin. syst.* 437.
Gm. Lin. 1163.

Gadus dorso tripterygio, ore
cirrato, ossiculo pinnarum
ventralium primo in longam

Le Gade Bib. *De la Cepede*
Hist. des Poissons, ii. 403.

THIS species grows to the length of one foot; the greatest depth three inches and a half. The scales are large, and, so far from adhering to the skin, as is asserted by naturalists, are extremely deciduous. The body is deep, the sides compressed; the eyes covered with a loose membrane, which it can blow up at pleasure, like a bladder; the mouth is small; beneath the chin is a beard, an inch long. In the first dorsal fin are twelve rays; in the second, which is longest, twenty-three; in the third, twenty; in the pectoral fins about sixteen; in the ventral six or seven, of which the first and second rays are long, and setaceous; the first anal fin has twenty-seven; the last twenty-one rays. The

DESCRIP-
TION.

back is of a light olive; the sides finely tinged with gold; the belly white; the anal fins dusky, edged with pure white; the tail with black.

[From the observations of Mr. *Hanmer* at *Penzance*, where the species is common, we are enabled to add the following particulars: The head and gill covers are silvery; both jaws are dotted with small punctures; the contour of the body is oval, quickly declining from the back towards the head and tail; the fins are thick, fleshy at their base, and capable of inflation; with the exception of the anal fin, they are of a light color edged with black; the lateral line is brown and slightly bent; the belly white; at the base of the pectoral fin is a black spot. The flesh is very good, resembling that of the whit-ing. At *St. Ives* it is known by the name of *Lug a Leaf*, at *Penzance* by that of *Bothock*, i. e. *Large Eyes*.

Bloch forms one species of this and the Pout Codfish, an opinion to which we are inclined to subscribe. ED.

- Le Merlan? *Belon* 120. *Gadus minutus. Lin. syst.* 6. POWER.
Anthiæ secunda species. Ron- 438. *Gm. Lin.* 1164.
del. 191. *Gesner pisc.* 56. L'Officier. *Duhamel Tr. des*
Asellus mollis minor, seu *Pesches.* ii. 127. *tab.* 21.
Asellus omnium minimus. *fig.* 2.
MOLLO *Venetiis.* CAPELAN Le Capelan ou l'Officier.
Massiliæ. Wil. Ichth. 171. *Bloch ichth.* ii. 148. *tab.* 67.
Poor or Power *Cornub.* Mr. *f.* 1.
Jago. Raii syn. pisc. 163. Le Gade Capelan. *De la Ce-*
fig. 6. *pede Hist. des Poissons.* ii.
Gadus dorso tripterygio, ore 414.
cirrato, corpore sescunciali,
ano in medio corporis.
Arted. synon. 36.

THIS is the only species of cod fish with three dorsal fins that we (at this time) are assured is found in the *Mediterranean* sea. It is taken near *Marseilles*, and sometimes in such quantities as to become a nuisance; for no other kinds of fish are caught during their season.* It is esteemed good, but incapable of being salted or dried: *Belon* says, that when it is dried in the sun, it grows as hard as horn; *C'est dela que les ANGLOIS l'ont nommè Bouclzs horn.*

It is the smallest species yet discovered, being little more than six inches long. On the chin

DESCRIP-
TION.

* *Rondel.* 191. In the *Baltic*, on the contrary, its presence is hailed with joy by the fisherman, as it is considered the forerunner of hadock, and the larger species of codfish. ED.

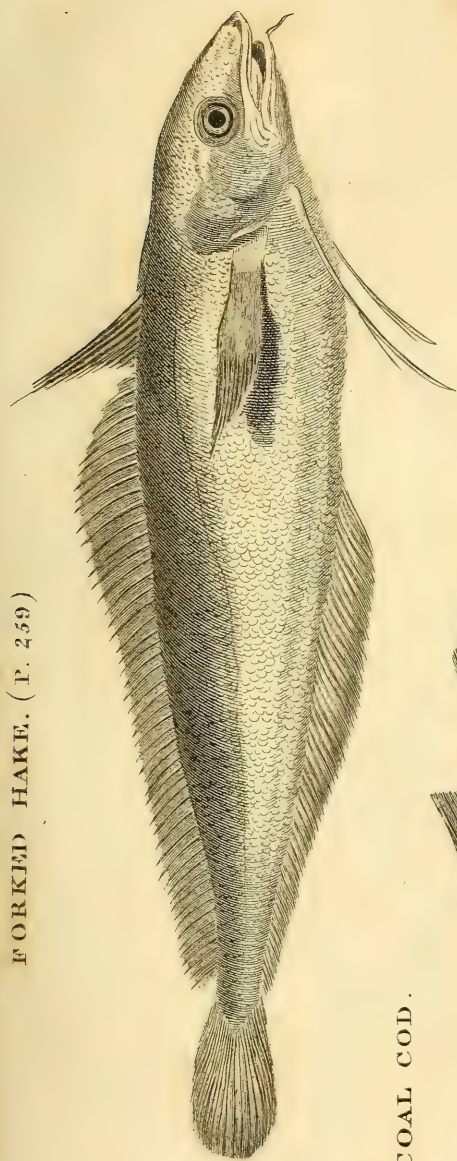
is a small beard; the eyes are covered with a loose membrane; on the gill-covers, and the jaws, are on each side nine punctures. The first dorsal fin has twelve rays; the second nineteen; the third seventeen; the pectoral fins thirteen; the ventral fins six; the first anal fin twenty-seven; the second seventeen. The color on the back is a light brown; on the belly a dirty white.

We owe the discovery of this kind in our seas to the Rev. Mr. *Jago*.

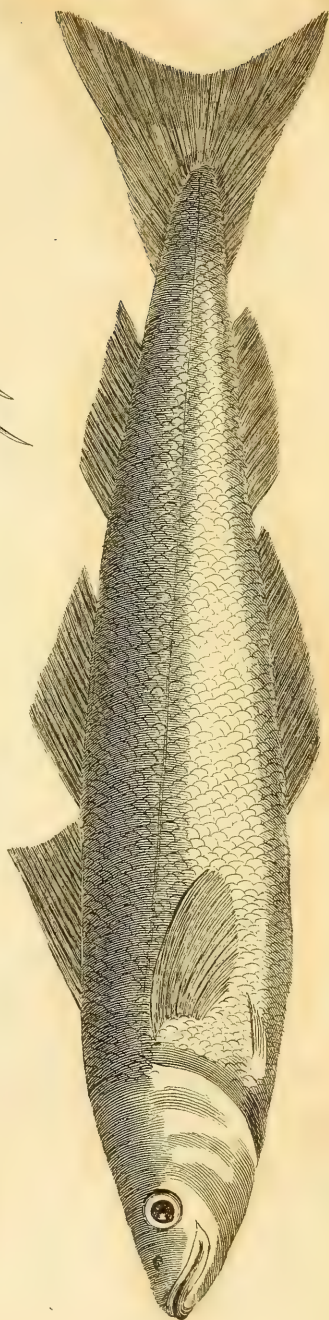
** Three dorsal fins: chin beardless.

- | | | |
|----------|--|--|
| 7. COAL. | Colfisch. <i>Belon</i> 128. | <i>Gadus carbonarius</i> . <i>Lin. syst.</i> |
| | Colfisch <i>Anglorum</i> . <i>Gesner</i> | 438. <i>Gm. Lin.</i> 1168. |
| | <i>pisc.</i> 89. | <i>Gronov. Zooph.</i> No. 317. |
| | Asellus niger. Kolfisch. Koler. | Le Colin. <i>Duhamel Tr. des</i> |
| | <i>Schonevelde</i> 19. | <i>Pesches.</i> ii. 125. <i>tab.</i> 21. |
| | Cole fish <i>Septentrionalium an-</i> | <i>fig.</i> 1. |
| | <i>glorum</i> . Rawlin Pollack | Le Colin. <i>Bloch ichth.</i> ii. 146. |
| | <i>Cornubiensium</i> . <i>Wil. pisc.</i> | <i>tab.</i> 66. |
| | 168. <i>Raii syn. pisc.</i> 54. | Le Gade Colin. <i>De la Ce-</i> |
| | <i>Gadus dorso tripterygio</i> , ore | <i>pede Hist. des Poissons.</i> ii. |
| | imberbi, maxilla inferiore | 417. |
| | longiore et linea laterali | |
| | recta. <i>Arted. synon.</i> 34. | |

THE coal fish takes its name from the black color that it sometimes assumes. *Belon* calls it



FORKED HAKE. (P. 259)



COAL COD.

the *Colfsch*, imagining it was so named by the *English*, from its producing the *Icthyocolla*, but *Gesner* gives the true etymology.

These fishes are common on most of our rocky and deep coasts, but particularly those of the north of *Great Britain*. They swarm about the *Orknies*, where the fry are the great support of the poor.

The fry is known by different names in different places: they are called at *Scarborough*, *Parrs*, and when a year old, *Billets*. About nine or ten years ago such a glut of *Parrs* visited that part, that for several weeks it was impossible to dip a pail into the sea without taking some.

The young begin to appear on the *Yorkshire* coast the beginning of *July* in vast shoals, and are at that time about an inch and an half long; in *August* they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but grow so coarse when they are a year old that few people will eat them. Fishes of that age are from eight to fifteen inches long, and begin to have a little blackness near the gills, and on the back, and the blackness increases as they grow older.

Though this fish is so little esteemed when

fresh, yet it is salted and dried for sale; a person in one year having cured above a thousand at *Scarborough*.

DESCRIP-
TION.

The coal fish is of a more elegant form than the common cod fish; it generally grows to the length of two feet and an half, and weighs about twenty-eight or thirty pounds at most. The head is small; the under jaw a little longer than the upper; the irides silvery, marked on one side with a black spot. It has three dorsal fins, the first consists of fourteen, the next of twenty, the last of twenty-two rays; the pectoral fins consist of eighteen; the ventral of six; the first anal fin of twenty-two, the second of nineteen rays. The tail is broad and forked. These fish vary in color; we have seen some whose back, nose, dorsal fins and tail, were of a deep black; the gill covers silver and black; the ventral and anal fins white; the belly of the same color. We have seen others dusky, others brown, but in all the lateral line was strait and white, and the lower part of the ventral and anal fins white.

- Gadus virens*. *G. dorso virescente*, cauda bifurcâ. *Gm.* xxiii.
Lin. 1166. *Faun. Suec.* *Gron. act. ups.* 1742. p. 90.
 309. Le Gade Sey. *De la Cepede*
Faun. Groenl. 148. *Hist. des Poissons.* ii. 421.
Mull. prodr. Zool. dan. 43.

THE green Cod fish is beardless, smooth, of a dusky green on the back, and silvery in every other part; the jaws are of equal length; the side line strait; the tail forked.

DESCRIP-
TION.

I was favored by Sir *John Cullum*, Bart. with the notice of this species being *British*; he observed numbers of them, which had been taken in the *German* ocean; none exceeded seven inches in length: *Linnæus* does not attribute to them a greater size than that of the *Perch*.

9. POLLACK. Asellus flavescens; Gelbe Kollumlen. *Schonevelde* 20.
 Asellus Huitingo-Pollachius. *Wil. Ichth.* 167.
 Whiting Pollack. *Raii syn. pisc.* 53.
 Gadus dorso tripterygio, ore imberbi, max. inf. longiore, linea laterali curva. *Arted. synon.* 35.
 Gadus Pollachius. *Lin. syst.* 439. *Gm. Lin.* 1169.
Gronov. Zooph. No. 318.
Faun. Suec. No. 309.
 Le Lieu. *Duhamel Tr. des Pesches.* ii. 121. *tab.* 20.
 Le Lieu. *Bloch ichth.* ii. 152. *tab.* 68.
 Le Gade Pollack. *De la Cepede Hist. des Poissons.* ii. 416.

THIS species is common on many of our rocky coasts. Pollacks are seen during summer in great shoals frolicking on the surface of the water, and flinging themselves into a thousand forms. They are at that time so wanton as to bite at any thing that appears on the top of the waves, and are often taken with a goose's feather fixed to the hook. They are very strong, and are observed to keep their station at the feet of the rocks in the most turbulent and rapid sea. They are a good eating fish, but do not grow to a very large size; at lest the biggest we have seen did not exceed six or seven pounds: we have heard of some that were taken in the sea near *Scarborough*, which they frequent during winter, that weighed near twenty-eight pounds. They are there called *Leets*.

The under jaw is longer than the upper; the head and body rise pretty high, as far as the first dorsal fin; the side line is incurvated, rising towards the middle of the back, then sinking and running strait to the tail, which is broad, and of a brown color; the first dorsal fin has eleven rays, the middle nineteen, the last sixteen; the tail is a little forked. The color of the back is dusky, of some inclining to green; the sides beneath the lateral line marked with lines of yellow; the belly white; sometimes of a bright red on the back and fins, and the sides of a bright yellow, spotted with green.*

DESCRIP-
TION.

Secunda asellorum species. <i>Rondel.</i> 276.	<i>Gadus merlangus.</i> <i>Lin. syst.</i> 438. <i>Gm. Lin.</i> 1167.	10. WHI- TING.
<i>Merlanus.</i> <i>Rondel. Gesner</i> <i>pisc.</i> 85.	<i>Gronov. Zooph.</i> No. 316. <i>Hwitling, Widding. Faun.</i> <i>Succ.</i> No. 310.	
<i>Asellus candidus primus,</i> <i>Witling. Schonevelde</i> 17.	<i>Le Merlan. Duhamel Tr. des</i> <i>Pesches.</i> ii. 128. <i>tab.</i> 22.	
<i>Asellus mollis major, seu al-</i> <i>bus. Wil. Ichth.</i> 170.	<i>Le Merlan. Bloch ichth.</i> ii. 143. <i>tab.</i> 65.	
<i>Whiting. Raii syn. pisc.</i> 55.	<i>Le Gade Merlan. De la Ce-</i> <i>pede Hist. des Poissons.</i> ii. 424.	
<i>Gadus dorso tripterygio, ore</i> <i>imberbi, corpore albo, max-</i> <i>illa superiore longiore. Ar-</i> <i>ted. synonym.</i> 34.		

WHITINGS appear in vast shoals in our seas in the spring, keeping at the distance of

* *Ascan. icon.* xxii.

about half a mile to that of three miles from the shore. They are caught in great numbers by the line, and afford excellent diversion. They are the most delicate, as well as the most wholesome of any of the genus, but do not grow to a large size; the biggest we ever saw * not exceeding twenty inches, but that is very uncommon, the usual length being ten or twelve.

DESCRIP-
TION.

It is a fish of an elegant make; the upper jaw is the longest; the eyes large, the nose sharp, the teeth of the upper jaw long, and appear above the lower when closed; the first dorsal fin has fifteen rays, the second eighteen, the last twenty. The color of the head and back is a pale brown; the lateral line white, and crooked; the belly and sides silvery; the last streaked lengthways with yellow.

* We have been informed that whittings, from four to eight pounds in weight, have been taken in the deep water at the edge of the *Dogger-Bank*.

* * With two dorsal fins.
* *

Le Merluz. *Belon*, 115.

Asellus, ὄνος, ὄνισκος. *Rondel.*
272.

Merlucius. *Gesner pisc.* 84.

Asellus primus sive Merlucius.
Wil. Ichth. 174.

The Hake. *Raii syn. pisc.* 56.

Gadus dorso dipterygio, max-
illa inferiore longiore. *Ar-*
ted. synon. 36.

Gadus Merlucius. *Lin. syst.*
439. *Gm. Lin.* 1169.

Faun. Suec. No. 314.

Faun. Groenl. 148.

Gronov. Zooph. No. 315.

Le Merlin. *Duhamel Tr. des*
Pesches. ii. 141. *tab.* 24.

La Merluche. *Bloch ichth.* v.
78. *tab.* 164.

Le Gade Merlus. *De la Ce-*
pede Hist. des Poissons. ii.
446.

11. HAKE.

A FISH that is found in vast abundance on many of our coasts, and of those of *Ireland*. There was formerly a vast stationary fishery of Hake on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in *June*, during the Mackrel season, the other in *September*, at the beginning of the Herring season, probably in pursuit of those fish: it was no unusual thing for six men with hooks and lines to take a thousand Hake in one night, besides a considerable quantity of other fish. These were salted and sent to *Spain*, particularly to *Bilboa*. * We are

* *Smith's Hist. Waterford*, 261.

at this time uninformed of the state of this fishery, but find that Mr. *Smith*, who wrote the history of the county of *Waterford*, complains even in his time (1746) of its decline. Many of the gregarious fishes are subject to change their situations, and desert their haunts for numbers of years, and then return again. We see p. 135, how unsettled the Basking Shark appears to be: Mr. *Smith* instances the loss of the Hadock on the *Waterford* shores, where they used to swarm; and to our knowledge we can bring the capriciousness of the herrings, which frequently quit their stations, as another example.

Sometimes the irregular migration of fish is owing to their being followed and harassed by an unusual number of fish of prey, such as the shark kind; sometimes to deficiency of the smaller fish, which served them as food; and lastly, in many places to the custom of trawling, which not only demolishes a quantity of their spawn, which is deposited in the sand, but also destroys or drives into deeper waters numberless worms and insects, the repast of many fishes.

The hake is in *England* esteemed a very coarse fish, and is seldom admitted to table either fresh or salted.*

DESCRIP-
TION.

These fishes grow from a foot and an half to

* When cured it is known by the name of *Poor John*.

near twice that length; they are of a slender make, of a pale ash color on their backs, and of a dirty white on their bellies. Their head is flat and broad; the mouth very wide; the teeth very long and sharp, particularly those of the lower jaw; the first dorsal fin is small, consisting of nine rays; the second reaches from the base of the former almost to the tail, and is composed of forty rays, of which the last are the highest; the pectoral fins have about twelve, the ventral seven; the anal thirty-nine; the tail is almost even at the end.

Galee, claria marina. <i>Belon</i> , 126.	Blennius Phycis. <i>Lin. syst.</i> 12. 442. <i>Gm. Lin.</i> 1179.	12. FORKED HAKE.
Phycis. <i>Rondel.</i> 186. <i>Gesner</i> <i>pisc.</i> 718.	Le petit Lingue, ou Merlex barbu. <i>Duhamel Tr. des</i> <i>Pesches.</i> ii. 147. <i>tab.</i> 25. <i>fig.</i>	
Tinca marina. <i>Aldr. Wil.</i> <i>Ichth.</i> 205. <i>Ruii syn. pisc.</i> 75.	4. Le Blennie Phycis. <i>De la Ce-</i> <i>pede Hist. des Poissons.</i> ii. 465.	
Phycis. <i>Arted. synon. App.</i> iii.		

THIS is the fish to which *Rondeletius* gives the name of *Phycis*, borrowing it from *Aristotle* and *Pliny*, who have not so sufficiently characterized it, as to enable us to judge what species they intended. It is found in the *Mediterranean* more frequently than in our seas, and we believe

is the fish mentioned by Mr. *Armstrong*, and Doctor *Cleghorn*,* in their histories of *Minorca*, under the name of *Molio*, *Mollera*, and *Molle*. It is known on the coast of *Cornwall* by the name of the great forked beard,† where it was first discovered by Mr. *Jago*. We place it in this genus, as it has more the appearance of the cod fish kind, the hake especially, than of the Blenny, into which genus *Linnæus* has flung it; we therefore have given this species the name of the Forked Hake.

DESCRIP-
TION.

The length of one that was taken on the *Flintshire* shores was eleven inches and an half, its greatest depth three inches; but according to Dr. *Borlase*, some grow to be above eighteen inches long. The head sloped down to the nose in the same easy manner with others of this genus; the mouth was large; besides the teeth in the jaws was a triangular congeries of small teeth in the roof of the mouth; at the end of the lower jaw was a small beard. The first dorsal fin was triangular; the first ray extended far beyond the rest, and was very slender; the second fin began just behind the first, and extended almost

* *Armstrong*, 161. *Cleghorn*, 43.

† *Barbus major Cornubiensis cirris bifurcatis*: the great forked beard. Mr. *Jago*. *Raii syn. pisc.* 163. fig. 7.

to the tail; the ventral fins were three inches long, and consisted of only two rays, joined at the bottom, and separated or bifurcated towards the end; the vent was in the middle of the body; the anal fin extended from thence just to the tail; the lateral line was incurvated; the tail rounded. The color was a cinereous brown.

Barbus minor <i>Cornubiensis</i> cir-	<i>Raii syn. pisc.</i> 164. <i>fig.</i>	13. LEST
ris bifurcis. The Lesser	8.	HAKE.
Forked Beard. Mr. <i>Jago.</i>	<i>Blennius Phycis. β. Gm. Lin.</i>	
	1180.	

WE never saw this species, and having but very imperfect descriptions of it, cannot with any certainty pronounce it to be of this genus, but are unwilling to separate them, as we found them united by that judicious Ichthyologist Mr. *Jago*.

It is said not to exceed five inches in length; the first dorsal fin (in the print) is shorter than that of the preceding; the second resembles that of the other kind: the ventral fins are bifurcated. It has a small beard, and a rounded tail, but the head is shorter and more steep; the color black, the skin smooth, and the appearance disagreeable.

DESCRIPTION.

14. LING. Ling, Lingfische. *Belon*, 130. Gadus Molva. *Lin. syst.* 439.
Gesner pisc. 95. *Gm. Lin.* 1170.
Molva major, *Charleton ex. Faun. Groenl.* 148.
pisc. 3. Langa. *Faun. Suec.* No. 313.
Asellus longus, eine Lenge. Le Lingue. *Duhamel Tr. des*
Schonevelde, 18. *Peschcs.* ii. 145. *tab.* 25.
Ling. *Wil. Ichth.* 175. *Ruii fig.* 1.
syn. pisc. 56. Le Lingue. *Bloch ichth.* ii.
Gadus dorso dipterygio, ore 155. *tab.* 69.
serrato, maxilla superiore Le Gade Molve. *De la Cepede*
longiore. *Arted. synonym.* 36. *Hist. des Poissons.* ii. 432.

THE ling takes its name from its length, being corrupted from the word *long*. It abounds about the *Scilly Isles*, on the coasts of *Scarborough*, and those of *Scotland* and *Ireland*, and forms a considerable article of commerce.* In the *Yorkshire* seas they are in perfection from the beginning of *February* to the beginning of *May*, and some till the end of that month. In *June* they spawn, depositing their eggs in the soft oozy ground of the mouth of the *Tees*: at that time the males separate from the females, and resort to some rocky ground near *Flamborough Head*, where the fishermen take great

* This branch of trade was considerable so long ago as the reign of *Edward III.* an act for regulating the price of *Lob*, *Ling*, and *Cod*, being made in his 31st year.

numbers without ever finding any of the female or roed fish among them.

While a ling is in season its liver is very white, and abounds with a fine flavored oil; but as soon as it goes out of season, the liver becomes red as that of a bullock, and affords no oil. The same happens to the common cod and other fishes in a certain degree, but not so remarkably as in the ling. When the fish is in perfection, a very large quantity of oil may be melted out of the liver by a slow fire, but if a violent sudden heat be used for that purpose, it yields very little. This oil, which nature hoards up in the cellular membranes of fishes, returns into their blood, and supports them in the engendring season, when they pursue the business of generation with so much eagerness as to neglect their food.

Vast quantities of ling are salted for exportation, as well as for home consumption. When it is cut or split for curing, it must measure twenty-six inches or upwards from the shoulder to the tail; if less than that it is not reckoned a sizeable fish, and consequently not entitled to the bounty on exportation; such are called *Drizzles*, and are in season all summer.

The usual size of a ling is from three to four feet, but we have heard of one that was seven

DESCRIP-
TION.

feet long. The body is very slender; the head flat; the upper jaw the longer; the teeth in that jaw small and very numerous; in the lower, few, slender, and sharp; on the chin is a small beard. The first dorsal fin is small, placed near the head, and consists of fifteen rays; the second is very long, reaching almost to the tail, and consists of sixty-five rays; the pectoral fins have fifteen radiated rays; the ventral fins six; the anal sixty-two; the tail is rounded at the end. These fishes vary in color, some being of an olive hue on the sides and back, others cinereous; the belly white. The ventral fins white; the dorsal and anal edged with white. The tail marked near the end with a transverse black bar, and tipt with white.

- Strinsias, ou Botatrisa. *Belon*, 300. Aal-rutte, Rutte. *Kram.* 388. 15. BURBOT.
 Lota. *Rondel. fluvial.* 165. Gadus dorso dipterygio, ore
Gesner pisc. 599. cirrato, maxillis æqualibus.
 Quappen, Elff-quappen, Ti- *Arted. Synon.* 38.
 der-quappen, Truschen? Gadus Lota. *Lin. Syst.* 440.
Schonevelde, 49. *Gm. Lin.* 1172. *Gronov.*
 Burbot, or Bird-bolt. *Plot* Lake. *Faun. Succ.* No. 113.
Staff. 241. *tab.* 22. *fig.* 4. La Lote. *Bloch ichth.* ii. 158.
 Mustela fluviatilis nostratibus *tab.* 70.
 Eel-pout. *Wil. Ichth.* 125. Le Gade Lote. *De la Cepede*
Raii Syn. pisc. 67. *Hist. des Poissons.* ii. 435.

THIS fish is found in the *Trent* and the rivers which fall into it, but in greater plenty in the river *Witham*, and in the great *East Fen* in *Lincolnshire*. It is a very delicate fish for the table, though of a disgusting appearance when alive: it is very voracious, and preys on the fry and lesser fishes. It does not often take a bait, but is generally caught in weels.

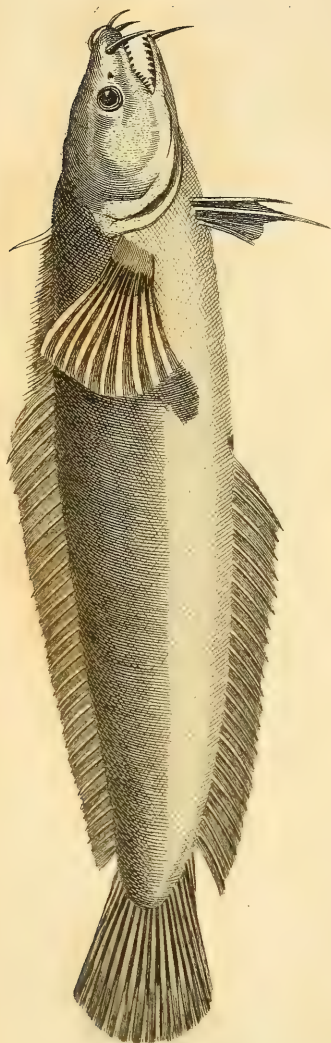
It abounds in the lake of *Geneva*, where it is called *Lota*, and it is also met with in the *Lago Maggiore*, and *Lugano*.

The largest that we ever heard of in *Great Britain*, was taken in the *Trent*, by Sir *Jervase Clifton*, which weighed eight pounds; but that is a very unusual size; it seldom attains the weight of two or three pounds. The body has

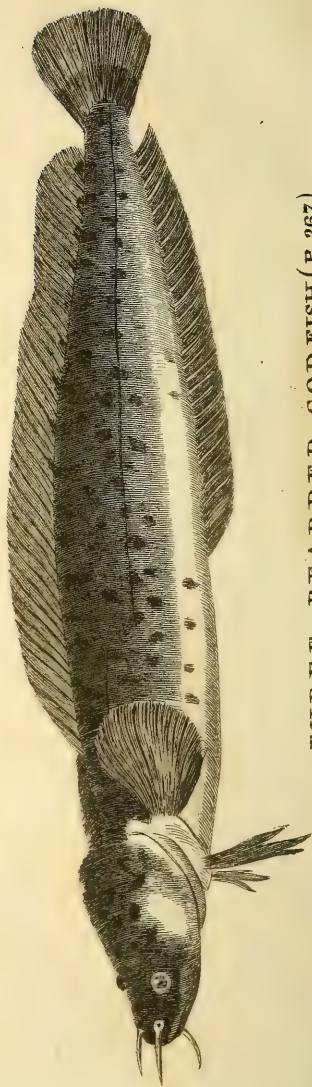
DESCRIP-
TION.

some resemblance to that of an eel, only shorter and thicker, and its motions also resemble those of that fish; it is, besides, very smooth, slippery, and slimy. The head is very ugly, being flat, and shaped like that of a toad; the teeth are very small, but numerous; the irides yellow; on the end of the nose are two small beards; on the chin another; the number of its branchiostegous rays are seven. The first dorsal fin is short; the second is placed immediately behind it, and extends almost to the tail; the pectoral fins are rounded; the ventral fins consist of six rays, of which the two first are divided near their ends from each other; the vent is placed in the middle of the belly, and the anal fin reaches almost to the tail; the tail is rounded at the end. The color of this species varies; some are dusky, others of a dirty green, spotted with black, and oftentimes with yellow, and the belly in some is white; but the real colors are frequently concealed by the slime.

FIVE BEARDED COD FISH (P. 260)



THREE BEARDED COD FISH (P. 267)



Mustella vulgaris. <i>Rondel.</i>	Rockling, Mr. <i>Jago. Raii</i>	16. THREE BEARDED.
281. <i>Gesner pisc.</i> 89.	<i>Syn. pisc.</i> 164. <i>fig.</i> 9.	
Gadus Mustela. <i>Gm. Lin.</i>	La Mustele. <i>Bloch ichth.</i> v.	
1174. <i>β.</i>	83. <i>tab.</i> 165.	
Sea Loche <i>Cestriæ</i> , Whistle	Le Gade Mustele. <i>De la Ce-</i>	
fish <i>Cornubiæ. Wil. Ichth.</i>	<i>pède Hist. des Poissons</i> , ii.	
121. <i>Raii Syn. pisc.</i> 67.	441.	

THIS species commonly frequents the rocky shores of these islands, and is sometimes taken with a bait.

It grows to the length of nineteen inches ; the weight is two pounds two ounces. The head is large and flat ; the eyes not remote from the end of the nose ; the body is long, slender, and compressed sideways, especially towards the tail ; at the end of the upper jaw are two beards ; on the chin one. The teeth are numerous and small, disposed along the jaws in form of a broad plate ; in the roof of the mouth is a set of small teeth, disposed in a triangular form. The number of branchiostegous rays is seven. The first dorsal fin is lodged in a deep furrow just beyond the head, and consists of a number of short unconnected rays ; the second rises just behind it, and reaches very near the tail ; the pectoral fins are broad and round ; the ventral fins small ; the second ray the longest ; the

DESCRIP-
TION.

FIVE BEARDED COD FISH. CLASS IV.

anal fin reaches almost to the tail; the tail is rounded at the end. The scales are very small; the color of the body and head a reddish yellow, marked above the lateral line with large black spots; the back fin and tail are darker; the vent fin of a brighter red, but all are spotted. The lateral line bends in the middle, then passes straight to the tail.

17. FIVE
BEARDED;

Gadus dorso dipterygio, sulco magno ad pinnam dorsi primam, ore cirrato? *Arted. Synon.* 37.

Gadus mustela. *G. diptery-*

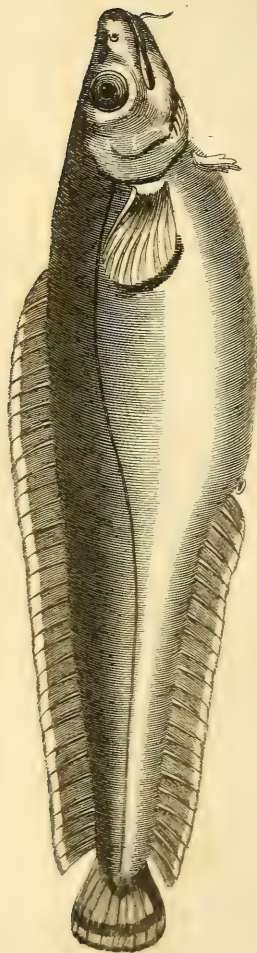
gius cirris 5, pinna dorsali priore exoleta. *Lin. Syst.* 440. *Gm. Lin.* 1173. *Gravov. Zooph.* No. 314.

MR. *Willughby* makes this species with five beards, a variety only of the former; but having had an opportunity of examining several specimens, we must dissent from his opinion, as we always observed the number of the beards in the spotted kind not to exceed three, or the number in the brown kind to be less than five.

DESCRIP-
TION.

The first ray of the dorsal fin is very long. There is also some difference in the form as well as color, this species being rather thicker in proportion than the former. Excepting these particulars, and the number of beards, there is a general agreement in the parts of both. The

TORSK COD FISH.



beards on the upper jaw are four, viz. two at the very end of the nose, and two a little above them; on the end of the lower jaw is a single one. These fish are of a deep olive brown, their belly whitish. They grow to the same size as the former.

The *Cornish* fishermen are said to whistle, and make use of the words *Bod, Bod, vean*, when they are desirous of taking this fish, as if by that they facilitated the capture. In the same manner the *Sicilian* fishermen repeat their *Mamassu di pajanu*, &c. when they are in pursuit of the Sword Fish.*

* * * With one dorsal fin.
* * *

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|--|--|
| Gadus Broome. G. ore cirroso, cauda ovata. <i>Gm. Lin.</i> | <i>Barry's Hist. of Orkney Isles</i> , 18. TORSK. |
| 1175. | 292. |
| <i>Faun. Groenl.</i> 149. | <i>Eller Torsk. Strom Sondmoer</i> , |
| <i>Mull. prod. Zool. dan.</i> 41. | 272. <i>tab. 1. f. 19.</i> |
| <i>Ascan. icon. rer. nat.</i> 17. | La Blennie Torsk. <i>De la Cepede Hist. des Poissons</i> , ii. |
| <i>Pontopp. Norway</i> , ii. 110. | 510. |

THIS fish has been hitherto supposed to be of the section of this genus, which has three dorsal fins. The species known in *Sweden* by

* *Vide p. 218.*

that name is included in that division; and as such I described it in the former edition from the account *Linnæus* has given us. But from the information of the Rev. Mr. *Low*, minister of *Birsa, Orkney*, who in 1774, made (at my request) the voyage of the *Shetland* islands, I find the *British Torsk* to be totally different; and will occasion the addition of a fourth division in this genus.

The *Torsk* is described and engraven in Mr. *Strom's* history of *Sondmoer*, under the same name, and when dried, under that of *Klip fish*. The figure agrees with that Mr. *Low* favored me with.

The *Torsk*, or, as it is called in the *Shetlands*, *Tusk* and *Brismak*, is a northern fish; and as yet undiscovered lower than about the *Orknies*, and even there it is rather scarce. In the seas about *Shetland*, it swarms, and forms (barrelled or dried) a considerable article of commerce.

DESCRIP-
TION.

The length of the specimen, Mr. *Low* described for me, was twenty inches, the greatest depth four and a half. The head small, the upper jaw a little longer than the lower; both jaws furnished with multitudes of small teeth; on the chin was a small single beard; from the head to the dorsal fin was a deep furrow. The dorsal fin began within six inches from the tip of

the nose, and extended almost to the tail; the pectoral fins were small, and rounded; the ventral short, thick, and fleshy, ending in four *cirri*. The belly from the throat very prominent; the anal fin was long, and reached almost close to the tail, which is small and circular; the number of rays could not be counted with accuracy by reason of their softness, and the thickness of the skin; the side line was scarcely discernible. The color of the head was dusky; the back and sides yellow; the belly white; the edges of the dorsal, anal, and caudal fins, white; the other parts dusky; the pectoral fins brown.

I flatter myself, that in a small time, the public will receive from Mr. *Low*, a fuller account of this important fish, in a comprehensive history of the islands of *Orkney* and *Shetland*.*

* This wish has been frustrated, but subsequent accounts of the *Orkney* and *Shetland* isles have been given by Mr. *Neill*, the reverend *George Barry*, and by Doctor *Edmonston*. These gentlemen inform us, that the Torsk, or more properly Tusk (the former appellation being given to the common Cod fish), is shaped something like the ling, but is much shorter and thicker in proportion to its length; it also resembles that fish in its habits, but is not so gregarious. It has occasionally been met with in the *Edinburgh* markets, but is a complete northern fish, and observed more frequently on the coasts of the *Shetland* than of the *Orkney* isles. ED.

GENUS XXVII.

TADPOLE FISH.

HEAD depressed, very large.

BODY much compressed.

MOUTH very wide.

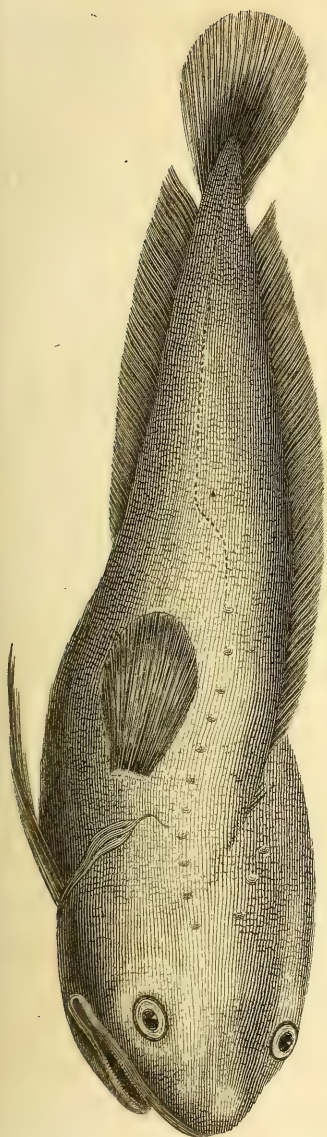
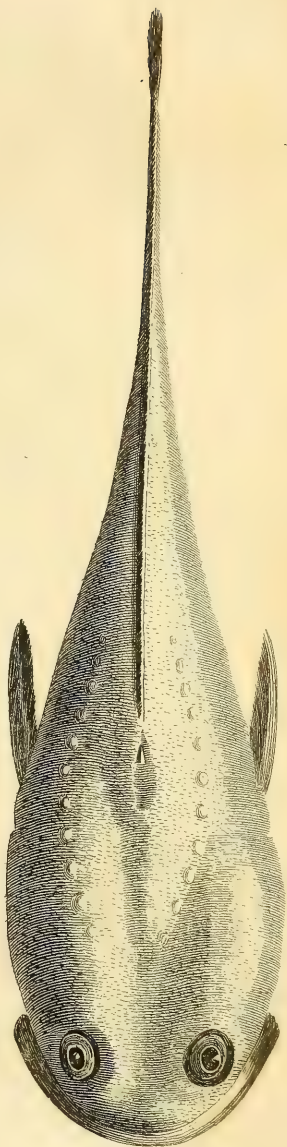
BEARDS one or more on the lower jaw.

- | | | |
|----------------------|--|---|
| 1. TRIFUR-
CATED. | <i>Batrachoides</i> * <i>trifurcatus</i> , in
foveola dorsali pinnæ primæ
rudimento, serie verrucarum
9—10 utrinque; cirro men-
tali. <i>Gent. Magaz. June</i>
1809. <i>Pennant's Tour in</i>
<i>Wales</i> , ed. 1810. vol. iii. p.
41 & 420. | <i>Trifurcatus</i> Hake. <i>Br. Zool.</i>
iv. No. 84.
<i>Blennius tridactylus. De la</i>
<i>Cepede Hist. des Poissons. v.</i>
p. 486.
<i>Blennius trifurcatus. Shaw</i>
<i>Gen. Zool. iv. 174.</i>
<i>Turton's Brit. Fauna, p. 93.</i> |
|----------------------|--|---|

THE different specimens, which have been seen of this fish, measured from eight to twelve inches. Its color is a deep brown, except the foldings of the lips, which are snow-white; the

* So named from the resemblance it bears to the *Batrachus* (from *Βατραχος*, a frog) a name as old as *Pliny* for the *Rana piscatrix*, Toad fish, or sea Devil of *Ray* and *Willughby*, the *Lophicus* of *Linnaeus*, and the Angler of the present work. H. D.

TRIFURCATED TADPOLE FISH.



head depressed and very broad; eyes large, irides yellowish; mouth very wide, with irregular rows of incurvated teeth; in the roof of the mouth is likewise a congeries of teeth. No tongue, a broad abrupt rudiment only supplying the defect. The body is compressed, but remarkably so as it approaches the tail. It has, placed in a furrow, the rudiment of a first dorsal fin, consisting of three slender feeble rays, which may elude the ken of a cursory observer; the second dorsal fin reaches almost to the tail, and has sixty-two rays; the anal corresponds, and has fifty-nine; the tail thirty-six; the pectoral has twenty-three; the ventral six rays, the three last of which are very slender and short, and the whole connected by so very delicate a membrane, as to be readily separated in drying, which happening to be the case, with the subject which was sent to Mr. *Pennant*, deceived him, and induced him to bestow on it a trivial name not very apposite, but which it is by no means adviseable to change, as it has been transferred into so many eminent works. Above the pectoral fins, on each side, is a row of tubercles, nine or ten in number, from the last of which commences the lateral line, which descends in a curved direction at the middle, and

from thence continues straight to the tail. The tail and pectoral fins are rounded.

It seems rather extraordinary that the Count *de Cepede* should have placed this fish in the genus *BLENNIUS*, as it is so very nearly allied to both his species of *BATRACHOIDES*; from *BATR. Tau* it differs not much in the general form, but greatly in wanting the fringe of beards on the lower jaw, and the spines on the gill-covers. From *BATR. blennioides* it differs still less, as we may judge by *Muller's* figure, *Zool. Dan.* f. 45. but the single *cirrus* on the lower jaw distinguishes it from *BATR. Tau*, and the rudiment of a first dorsal fin placed in a *sulcus*, and a series of tubercles on each side of it, distinguish it perfectly from *BATR. blennioides*, as well as from *BATR. fuliginosus** of *Walbaum*, who, exclusive of the last mentioned particulars, seems inclined to suppose it a variety only of his *G. fuliginosus*, but those proving constant, which has been found to be the case, he does not hesitate to pronounce it a distinct species. Indeed, the series of tubercles, and the arrangement of them, seem to constitute a particular specific distinction between *BATR.*

* See *Gent. Magaz.* June 1809, and *Tours in Wales*, vol. iii. 421.

Tau, and *BATR. trifurcatus*, exclusive of every other; in *B. Tau*, they surround the eyes, *Oculi utrinque serie duplici verrucarum minorum cincti*. *Gmel. Lin.* 1172: in *B. trifurcatus*, they run in nearly parallel lines, one on each side of the *sulcus*, which contains the rudiment of a first dorsal fin.*

* The editor is indebted to the reverend *Hugh Davies* for the enlarged description, and valuable observations on this singular fish. *ED.*

GENUS XXVII. BLENNY.†

HEAD blunt at the end, and very steep.

TEETH slender.

BODY smooth and slippery, compressed sideways.

FINS ventral, consisting generally of only two united rays.

FIN dorsal, one.

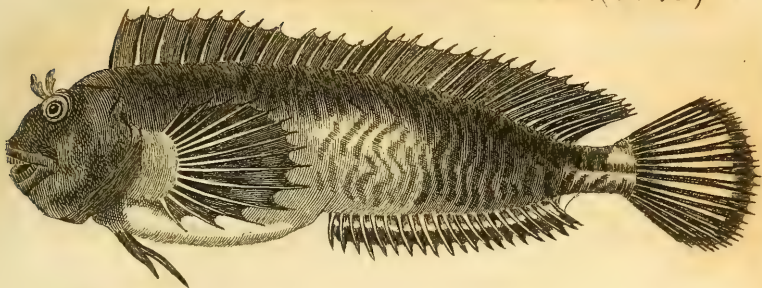
* With a crested head.

- | | |
|--|---|
| 1. CRESTED. Adonis, ou exocetus. <i>Belon</i> ,
219. | versa cutacea. <i>Arted. Synon</i> ,
44. |
| <i>Galerita. Rondel.</i> 204. <i>Gesner</i>
<i>pisc.</i> 14, 17, 18. | <i>Blennius Galerita. Lin. Syst.</i>
441. <i>Gm. Lin.</i> 1175. |
| <i>Alauda cristata, sive Galerita.</i>
<i>Wil. Ichth.</i> 134. <i>Raii Syn.</i>
<i>pisc.</i> 73. | <i>Le Blennie coquillade. De la</i>
<i>Cepede Hist. des Poissons</i> ,
ii. 477. |
| <i>Blennius crista capitis trans-</i> | |

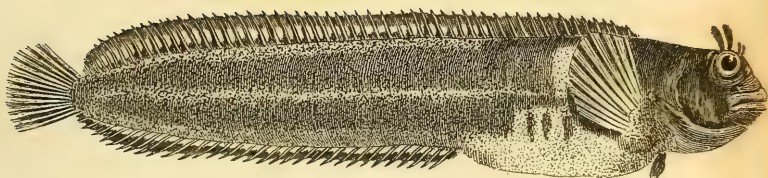
THIS species is found, though not frequently, on our rocky shores, and is commonly about

† There being no *English* name for this genus, *Blenny* is given it, derived from the word *Blennius*, the generical term used by *Artedius*, who forms it from *Βλέννα*, *mucus*, it being of a slimy nature.

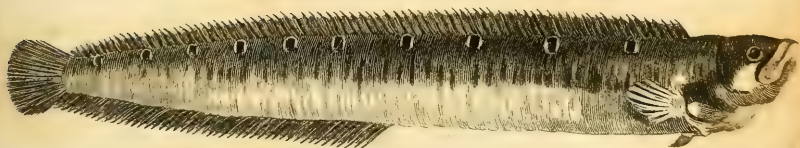
GATTORUGINE. BLENNY. (P. 278.)



CRESTED BLENNY (P. 276.)



SPOTTED BLENNY. (P. 282.)



four or five inches long. On the head is a small crest-like fin, which it can erect or depress at pleasure. On the top of the head, between the eyes, is a triangular lump pointing backwards, and red about its edges. The skin at the corner of the upper jaw is loose, and projects; from the hind part of the head, almost to the tail, extends the dorsal fin; the ventral fin is small; the vent is placed under the ends of the pectoral fins. The body is smooth and slippery: the color brown, and spotted.

DESCRIP-
TION.

Montagu in Mem. Wern. Soc. 98. tab. 5. f. 2.

(VAR.?)
DIMINUTIVE.

[Mr. *Montagu* describes a Blenny frequently caught on the western coast, which differs from the above in many respects, particularly in the breadth of the dorsal and anal fins, and in the former having a remarkable flexure in the middle, instead of being straight; on the head is no triangular lump, but a transverse, fleshy, fimbriated membrane. The body is rather more slender than that of the Smooth Blenny; the head much sloped; the upper lip furnished with a bony plate that projects at the angles of the mouth into a thin lamina, which turns downwards, the ends of which are orange colored;

the nostrils are furnished with a minute bifid appendage; behind the crest are several minute, erect, filiform *appendiculæ*; the lateral line is curved near the head; the pectoral fins are large and ovate, and consist of twelve rays; the ventral of two unconnected rays; the dorsal of thirty, and which, from the different lengths of the thirteenth and fourteenth rays, appears to be divided into two fins; the anal extends from the vent to the tail, and consists of eighteen rays; the tail, which is rounded, of fourteen rays. The color of the upper part of the body is generally olive green, spotted with pale blue, shaded to white; the belly white, and the pectoral fins spotted with orange. The general length from one inch and an half to two inches and an half. ED.

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|----------------|--|--|
| 2. GATTORUGIN. | Scorpioides. <i>Rondel.</i> 204. <i>Gesner pisc.</i> 847. | rum viginti trium. <i>Arted. Synon.</i> 44. |
| | Gattorugine <i>Venetiis. Wil. Ichth.</i> 132. <i>Raii Syn. pisc.</i> 72. | Blennius Gattorugine. <i>Lin. Syst.</i> 442. <i>Gm. Lin.</i> 1177. La Gattorugine. <i>Bloch ichth.</i> |
| | Blennius pinnulis duabus ad oculos, pinna ani ossiculo- | v. 94. <i>tab.</i> 167. <i>f.</i> 2. |
| | | <i>De la Cepede Hist. des Poissons</i> , ii. 468. |

PLACE. **T**HIS curious kind was discovered to be a *British* fish on the *Anglesey* coast.

Its length was seven inches and an half; the body was smooth, and compressed on the sides; the belly a little prominent; the vent situated as in the preceding fish. The teeth slender, almost setaceous, and very close set: between the eyes was a small hollow, and above each, just on the summit, was a narrow loose membrane, trifurcated at the top, which distinguishes this from all other species. The pectoral fins were broad and rounded, consisting of fourteen rays, which extended beyond the webs, making the edges appear scalloped; the ventral fins like those of others of the genus; the dorsal fin consisted of fourteen strong spiny rays, and nineteen soft rays; the last of which were higher than the spiny rays; the anal fin had twenty-one rays, the ends in every fin extending beyond their webs; the tail was rounded at the end, and consisted of twelve rays, divided towards their extremities. This fish in general was of a dusky hue, marked across with wavy lines; the belly of a light ash color. The lower part of the pectoral fins, and the ends of the ventral fins, of an orange color.

** With a smooth head.

3. SMOOTH. La tierce espece de Exocetus?

Belon, 219.*Alauda non cristata. Rondel.*205. *Gesner pisc.* 18.*Mulgranoc, & Bulcard Cornubiæ. Wil. Ichth.* 133. *Raii**Syn. pisc.* 73.*Cataphractus lævis Cornubien-**sis. Smooth Shan. Mr. Jago**apud Raii Syn. pisc.* 164.*fig.* 10.*Blennius maxilla superiore**longiore, capite summo acuminato. Arted. Synon.* 45.*Blennius Pholis. Lin. Syst.*443. *Gm. Lin.* 1180. *Gronov. Zooph. No.* 259.*Le Perce pierre. Bloch ichth.*ii. 164. *tab.* 71. *f.* 2.*Le Blennie Pholis. De la Ce-**pède Hist. des Poissons,* ii.

489.

WE discovered this species in plenty lying under the stones among the tang on the rocky coasts of *Anglesey*, at the lower water-mark. It was very active and vivacious, and would by the help of its ventral fins creep up between the stones with great facility. It bit extremely hard, and would hang at the finger for a considerable time. It was very tenacious of life, and lived for near a day out of water. It feeds on shells and small crabs, whose remains we found in its stomach.

DESCRIP-
TION.

The length in general was five inches; the head large, and sloping suddenly to the mouth; the irides red; the teeth slender, very sharp, and close set; there were twenty-four in the

SMOOTH BLENNY.



upper, and eighteen in the lower jaw. The pectoral fins were broad and rounded, consisting of thirteen rays; the ventral fins of only two thick rays, separated near their ends; the dorsal fin consisted of thirty-two soft rays, and reached from the hind part of the head almost to the tail; the vent was in the middle of the body; the anal fin extended almost to the tail, and consisted of nineteen rays, tipped with white; the tail was rounded at the end, and composed of twelve branched rays. The color varied; some were quite black, but generally they were of a deep olive, prettily marbled with a deeper color; others spotted with white; the last often disposed in rows above and beneath the lateral line.

4. SPOTTED. Gunnellus *Cornubiensium*, *Seb. Mus.* iii. p. 91. *tab.* 30. fig. 6.
 nonnullis *Butter-fish*, q. d.
 Liparis. *Wil. Ichth.* 115. *Pholis maculis annulatis ad*
Raii Syn. pisc. 144. *pinnam dorsalem, pinnis*
ventralibus obsoletis. Gron-
nov. Zooph. No. 267.
 Blennius maculis circiter de-
 cem nigris, limbo albicante
 utrinque ad pinnam dorsa-
 lem. *Arted. Synon.* 45. *Le Papillon de Mer. Bloch*
ichth. ii. 166. *tab.* 71. *f.* 1.
 Blennius Gunnellus, B. pinna *La Blennie Gunnel. De la*
 dorsali ocellis X nigris. *Lin. Cepede Hist. des Poissons,*
Syst. 443. *Gm. Lin.* 1181. *ii.* 503.
Faun. Suec. No. 318.

THIS species is found in the same place with the preceding, lurking like it under stones, is equally vivacious, and is used as a bait for larger fish.

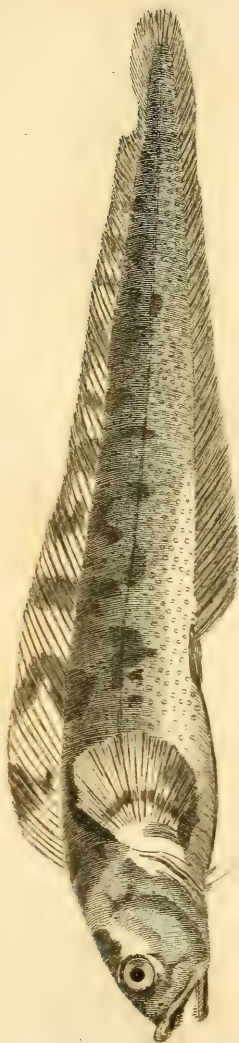
DESCRIP-
TION.

Its length is six inches; the depth only half an inch; the sides very much compressed; the head and mouth is small; the last points upwards, and the lower jaw slopes considerably towards the throat; the teeth are very small; the irides whitish; the pectoral fins rounded, and of a yellow color; instead of the ventral fins are two minute spines; the dorsal fin consists of seventy-eight short spiny rays, and runs the length of the back almost to the tail; on the top of the back are* eleven round spots,

* The number of spots varies. ED.



VIVIPAROUS BLENNY. (P. 283.)



SPOTTED GOBY. (P. 290.)



which reach to the lower half of the dorsal fin; they are black, half encircled with white. The vent is in the middle of the body; the anal fin extends from it almost to the tail; the tail is rounded, and of a yellow color; the back and sides are of a deep olive; the belly whitish.

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|--|--|----------------|
| Mustela marina vivipara, Ael-quappe, Ael-puet, Ael-moder. <i>Schonevelde</i> , 50. tab. 4. | tentaculis duobus. <i>Lin. Syst.</i> 443. <i>Gm. Lin.</i> 1182. | 5. VIVIPAROUS. |
| Guffer, Eelpout. <i>Sib. Scot.</i> iii. 25. | Tanglake. <i>Faun. Suec.</i> No. 317. <i>Mus. Ad. Fr.</i> i. 69. tab. 32. | |
| Mustela vivipara <i>Schoneveldii</i> . <i>Wil. Ichth.</i> 122. <i>Raii Syn. pisc.</i> 69. | Euchelyopus corpore lituris variegato; pinna dorsi ad caudam sinuata. <i>Gronov. Zooph.</i> No. 265. | |
| Blennius capite dorsoque fusco flavescente lituris nigris, pinna ani flava. <i>Arted. Synon.</i> 45. | La Lote vivipare. <i>Bloch ichth.</i> ii. 168. tab. 73. | |
| Blennius viviparus, B. ore | Le Blennie vivipare. <i>De la Cepede Hist. des Poissons</i> , ii. 496. | |

SCHONEVELDE first discovered this species; Sir *Robert Sibbald* afterwards found it on the *Scotch* coasts; and *Linnæus* has described it in his account of his *Swedish Majesty's Museum*.

It is viviparous, bringing forth two or three hundred young at a time; its season of parturition is a little after the depth of winter. Before Midsummer it quits the bays and shores,

and retires into the deep, where it is commonly taken. It is a very coarse fish, and eat only by the poor. It is common in the mouth of the river *Esk*, at *Whitby*, *Yorkshire*; where it is taken frequently from off the bridge.

DESCRIP-
TION.

It sometimes grows to the length of a foot. The form slender; the skin smooth and slippery; the teeth very minute and sharp; the upper lip thin and skinny. The dorsal fin commences just behind the head, and joins with that of the tail; but near the tail, the rays are short, so as to form the appearance of a division; the pectoral fins rounded; the ventral consist of only four short rays; the anal extends far, and unites with the tail; the tail is round. The dorsal fin, back, and sides, are of a yellowish brown, stained with dusky spots and lines; the end of the tongue, the chin, throat, and anal fin of a fine yellow; the back-bone is green, like that of a sea-needle.

SECT. III.

THORACIC FISHES.

GENUS XXVIII. BAND FISH.

HEAD short: teeth curved, sharp.

BODY very long and compressed.

ABDOMEN extremely short.

- Cepola rubescens*. C. pinna *Brunn. pisc. mass.* 28.
 caudæ attenuata maxillis a- *Montagu in Lin. Tr.* vii. 291.
 cutis. *Gm. Lin.* 1187. *Mus.* 7 tab. 17. 1803. 570 7
Ad. Fr. ii. 63. Le Cépole serpentiforme. *De*
Tænia serpens rubescens dicta. *la Cepede Hist. des Poissons,*
Arted. Synon. 115. ii. 529.

1. RED.

[THIS fish has been added to the list of *British* species by Mr. *Montagu*, and thus described by that excellent naturalist from a specimen taken in *Salcomb* bay on the coast of *Devonshire*, in *February* 1803.

“ Long, slender, smooth, semi-pellucid, somewhat compressed sideways, tapering from the head gradually to the tail; head not larger

DESCRIP-
TION.

than the body, sloping from the eye to the end of the upper jaw ; the under jaw longest, sloping upwards ; mouth large ; both jaws furnished with one row of distant, subulate, curved teeth at their very edge, the front ones projecting forward ; eyes large, placed high up in the head ; irides silver mixed with crimson ; pupil blue-black ; gill-coverts composed of two plates ; branchiostegous rays four ; pectoral fins, small, rounded, consisting of sixteen rays ; ventral small, oval, with six rays, the first short and spiny, with a filament adjoining longer than the other rays, and detached from them ; these fins are close together and rather before, than immediately under the pectorals ; the dorsal fin commences just behind the head, immediately above the opening of the gills, and continues without a division to join the tail, consisting of about seventy rays ; the anal fin commences just behind the vent, which is scarcely an inch from the ventral fins, and continues like the dorsal, to join the tail ; this has about sixty-one rays ; the caudal fin is lanceolate, the middle ray being much the longest, and gradually shortening on each side, till the distinction is lost in the dorsal and anal fins, and is composed of about twelve rays ; the tongue is short, and with the palate is smooth ; lateral line a little

curved near the head, and afterwards runs quite straight to the tail; skin smooth, but, when examined by a lens, appears finely punctured.

“ Color pale carmine, darkest above and towards the tail; gill-plates and undulated transverse lines along the sides, silvery; fins of the same color as the body, except the ventral, which are nearly white.

“ Length of the above specimen, supposed to be a female, ten inches; depth behind the head rather more than three quarters of an inch. Another taken a month afterwards at the same place was an inch longer, but not quite so deep; the color rather darker, and the base of the dorsal fin inclining to orange. This was probably a male.” ED.

GENUS XXIX. GOBY.*

EYES placed near each other.

FINS ventral united.

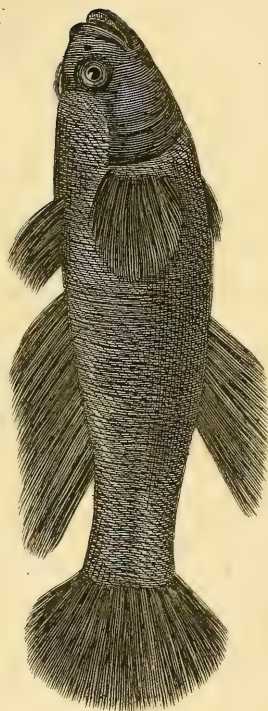
RAYS branchiostegous four.

1. BLACK. *Gobio niger*. *Rondel.* 200. *lorum quatuordecim. Arted.*
Gesner pisc. 395. *Synon.* 46.
 Schwartz Goeb. *Schonevel-* *Gobius niger. Lin. Syst.* 449.
de, 36. *Gm. Lin.* 1196.
 Sea Gudgeon. Rock-fish. *Wil.* *Le Boulerot. Bloch ichth.* ii.
Ichth. 206. *Raii Syn. pisc.* 4. *tab.* 38. *f.* 2. 3.
 76. *De la Ceppe Hist. des Pois-*
Gobius ex nigricante varius, *sons,* ii. 552.
pinna dorsi secunda ossicu-

IT is to this fish that naturalists have given the synonym of *Kw&105*, and *Gobio*, names of certain species mentioned by *Aristotle*, *Pliny*, and *Oppian*. The two first have not left any characters for us to distinguish them by; and *Oppian* at once shews that he never intended this kind, as he has placed it among those which are armed with a poisonous spine. *Aristotle* was

* Formed from *Gobius*, the generic name bestowed by naturalists on these fish.

BLACK GOBY.



acquainted with two species; one a sea fish that frequented the rocks, another that was gregarious, and an inhabitant of rivers, which last seems to have been our common gudgeon.

This species grows to the length of six inches; the body is soft, slippery, and of a slender form; the head is rather large; the cheeks inflated; the teeth small, and disposed in two rows; from the head to the first dorsal fin is a small *sulcus*. The first dorsal fin consists of six rays; the second of fourteen; the pectoral fins of sixteen or seventeen, closely set together, and the middlemost the longest; the others on each side gradually shorter; the ventral fins coalesce and form a sort of funnel, by which these fish affix themselves immoveably to the rocks, for which reason they are called *rock-fish*; the tail is rounded at the end. The color is brown, or deep olive, mixed with dark, and spotted with black; the dorsal and anal fins are of a pale blue, the rays marked with minute black spots.

DESCRIP-
TION.

2. SPOTTED. *Apoa?* *Athen. Lib.* vii. p. am pinnarum fuscis. *Lin.*
 284.? *Syst.* 450.?
Aphia. Belon, 207.? *G. minutus. Gm. Lin.* 1199.
Aphyia cobites. Rondel. 210. *Gobius minutus. G. albicans*
Gesner pisc. 67. *Wil. pisc.* ferrugineo-maculatus, radiis
 207. *Raii syn. pisc.* 76.? *dorsalibus et caudalibus fer-*
Gobius Aphyia et Marsio dic- *rugineo obsolete strictus.*
tus. Arted. Synon. 47.? *Pall. Spec. Zool.* viii. 4.
Gobius Aphyia. G. fasciis eti-

WE have seen several of this species taken on our sandy shores in the shrimp nets.

DESCRIP-
TION.

The length of the largest was not three inches; the nose was blunt; the eyes large and prominent, standing far out of the head; the irides sapphirine; the head flat; the tongue large; teeth in both jaws. The first dorsal fin consisted of six rays; the second of eleven, and placed at some distance from the other; the ventral fins were united; the anal consisted of eleven rays; the tail was even at the end. The body was of a whitish color, obscurely spotted with ferruginous; the rays of the dorsal fins, and the tail, barred with the same color.

ARMED BULL-HEAD. (P. 293)



RIVER BULL-HEAD. (P. 291)



GENUS XXX. BULL HEAD.

HEAD large flat, armed with sharp spines.

RAYs branchiostegous six.

- | | |
|---|---|
| Βοῖρος. <i>Arist. Hist. an. Lib.</i>
iv. c. 8. | pite diacantho. <i>Arted. Sy-</i> 1. RIVER.
<i>non.</i> 76. |
| Chabot. <i>Belon</i> , 213. | Cottus Gobio. C. lævis, ca- |
| Cottus. <i>Rondel. Fluviat.</i> 202. | pite spinis duabus. <i>Lin. Syst.</i> |
| Gobio capitatus. <i>Gesner pisc.</i>
401. | 452. <i>Gm. Lin.</i> 1211. |
| Een Müller. <i>Schwenckfelt</i>
<i>Siles.</i> 431. | Sten - simpa, Slagg - simpa.
<i>Faun. Suec.</i> No. 323. |
| Bull-head, Miller's Thumb. | Koppe. <i>Kram.</i> 384. <i>Gronov.</i> |
| <i>Wil. Ichth.</i> 137. <i>Raii Syn.</i> | <i>Zooph.</i> No. 270. |
| <i>pisc.</i> 76. | Le Chabot. <i>Bloch ichth.</i> ii. 11.
<i>tab.</i> 29. <i>f.</i> 1. 2. |
| Cottus alepidotus glaber, ca- | <i>Dé la Cepede Hist. des Pois-</i>
<i>sons</i> , iii. 252. |

THIS species is very common in all our clear brooks; it lies almost always at the bottom, either on the gravel or under a stone, deposits its spawn in a hole it forms in the gravel, and quits it with great reluctance. It feeds on water insects; and we found in the stomach of one the remains of the fresh water shrimp, the *pulex aquatilis* of Ray.

DESCRIP-
TION.

This fish seldom exceeds the length of three inches and an half; the head large, broad, flat, and thin at its circumference, being well adapted for insinuating itself under stones; on the middle part of the covers of the gills is a small crooked spine turning inwards. The eyes are very small; the irides yellow; the teeth very minute, placed in the jaws and the roof of the mouth; the body grows slender towards the tail, and is very smooth. The first dorsal fin consists of six rays, the second seventeen; the pectoral fins are round, and prettily scalloped at their edges, and are composed of thirteen rays; the ventral of only four; the anal of thirteen; the tail of twelve, and is rounded at the end. The color of this fish is as disagreeable as its form, being dusky, mixed with a dirty yellow; the belly whitish.

Cataphractus, Stein-bicker,	<i>Lin. Syst.</i> 451. <i>Gm. Lin.</i> 2. ARMED.
Miiller, Turss-bull. <i>Schone-</i>	1207.
<i>velde</i> , 30. <i>tab.</i> 3.	Botn-mus. <i>Faun. Suec.</i> No.
Cataphractus <i>Schoneveldii</i> Sep-	324.
tentr. <i>Anglis</i> a Pogge. <i>Wil.</i>	<i>Seb. Mus.</i> iii. <i>tab.</i> 28. <i>Gro-</i>
<i>Ichth.</i> 211. <i>Raii Syn. pisc.</i>	<i>nov. Zooph.</i> No. 271.
77.	Le Cataphracte. <i>Bloch ichth.</i>
Cottus cirris plurimis corpore	ii. 14. <i>tab.</i> 39. <i>f.</i> 3. 4.
octagono. <i>Arted. Synon.</i> 77.	L'Aspedophore armè. <i>De la</i>
Cottus Cataphractus. C. lori-	<i>Cepede Hist. des Poissons,</i>
catus, rostro verrucis 2 bi-	iii. 222.
fidis, capite subtus cirroso.	

THE armed Bull head or pogge is very common on most of the *British* coasts.

It seldom exceeds five inches and an half in length, and even seldom arrives at that size. The head is large, bony, and very rugged; the end of the nose is armed with four short upright spines; on the throat are a number of short white beards; the teeth are very minute, situated in the jaws. The body is octagonal, and covered with a number of strong bony crusts, divided into several copartments, the ends of which project into a sharp point, and form several echinated lines along the back and sides from the head to the tail. The first dorsal fin consists of six spiny rays; the second is placed just behind the first, and consists of seven soft

DESCRIP-
TION.

FATHER-LASHER BULL HEAD. CLASS IV.

rays; the pectoral fins are broad and rounded, and are composed of fifteen rays.

3. FATHER-LASHER. Scorpions. *Ovid. Halieut.* 116. periore paulo longiore. *Lin. Syst.* 452. *Gm. Lin.* 1210.
- Scorpius marinus, Waelkuke, Buloffe, Schorp-fische. Rot-simpa, Skrabba, Skialryta. *Faun. Suec.* No. 323.
- Schonevelde*, 67. *tab.* 6. Ulke. *Crantz. Greenl.* i. 95.
- Scorpænæ *Belonii* similis *Cornub.* Father-lasher. *Wil. Ichth.* 138. *Raii Syn. pisc.* 145. *Scorpius virginianus.* Gronov. *Zooph.* No. 268.
- Idem* 142. *Wil. Ichth. App.* 25. Sea Scorpion. *Edw.* 284.
- Cottus scorpius.* C. capite Le Scorpion de Mer. *Bloch Ichth.* ii. 17. *tab.* 40.
- spinis pluribus, maxilla su- Le Cotte Scorpion. *De la Cèpede Hist. des Poissons*, iii. 236.

THIS fish is not uncommon on the rocky coasts of this island: it lurks under stones, and will take a bait.

DESCRIPTION.

It does not grow to a large size, seldom exceeding (as far as we have seen in the specimens that are taken on our shores) eight or nine inches.

The head is flat, very large, and has a most formidable appearance, being armed with spines, which it can oppose to any enemy that attacks it, by swelling out its cheeks and gill covers to a large size.

Et capitis duro nociturus Scorpions ictu.

The hurtful *Scorpion* wounding with its head.



FATHER LASHER BULL-HEAD.



THE LASHED BUTT

The Lashed Butt is a small, slender, and very graceful fish, found in the shallow waters of the coast of Greenland. It is distinguished by its long, thin body, and its small, pointed snout. The jaws are covered with small, sharp teeth, and the root of the snout is covered with a small, pointed tooth. The body is covered with small, scales, and the tail is deeply forked. The fish is very active, and is often seen jumping out of the water.

The Lashed Butt is a very common fish, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water. The fish is very small, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water. The fish is very small, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water.

The fish is very frequent in the water, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water. The fish is very small, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water. The fish is very small, and is often found in the shallow waters of the coast of Greenland. It is a very active fish, and is often seen jumping out of the water.

The eyes are very close to each other. Between them and the mouth are two short spines; on the coverts of the gills is one spine of great length, strength, and sharpness; contiguous to it are three others very short, but sharp; the mouth is large; the jaws covered with rows of very small teeth; the roof of the mouth is furnished with a triangular spot of minute teeth. The back is more elevated than that of others of this genus; the belly prominent; the side-line rough, the rest of the body very smooth, and grows slender towards the tail. The first dorsal fin consists of eight spiny rays; the second of eleven high soft rays; the pectoral fins are large, and have sixteen; the ventral three; the anal eight; the tail is rounded at the end, and is composed of twelve bifurcated rays. The color of the body is brown, or dusky, and white marbled, and sometimes is found also stained with red; the fins and tail are transparent, sometimes clouded, but the rays barred regularly with brown; the belly is of a silvery white.

This kind is very frequent in the *Newfound-* AMERICAN.
land seas, where it is called *Scolping*: it is also as common on the coast of *Greenland* in deep water near shore. It is a principal food of the natives, and the soup made of it is said to be agreeable as well as wholesome.

GENUS XXXI. DOREE.

BODY very deep and compressed sideways.

FILAMENTS very long issuing from the first dorsal fin.

RAYs branchiostegous, seven.

1. COMMON. *Χαλκίδες*. *Athen. lib.* vii. 328.

Oppian Halieut. i. 133.

Faber? *Ovid Halieut.* 110.

Zeus idem Faber *Gadibus*.

Plin. lib. ix. c. 18.

La Dorée. *Belon*, 146.

Faber sive *Gallus marinus*.

Rondel. 328. *Gesner pisc.*

369.

A Doree. *Wil. Ichth.* 294.

Raii syn. pisc. 99.

Zeus ventre aculeato, cauda

in extremo circinato. *Arted.*

synon. 78.

Zeus Faber. *Z.* cauda rotun-

data, lateribus mediis ocello

fusco, pinnis analibus dua-

bus. *Lin. syst.* 454. *Gm.*

Lin. 1223. *Gronov. Zooph.*

No. 311.

Zeus spinosus. *Mus. Fred.*

Ad. 67. *tab.* xxxi.

La Doree. *Duhamel Tr. des*

Pesches, iii. 85. *sect.* 5. *tab.*

1. *fig.* 1.

La Doree. *Bloch ichth.* ii. 23.

tab. 41.

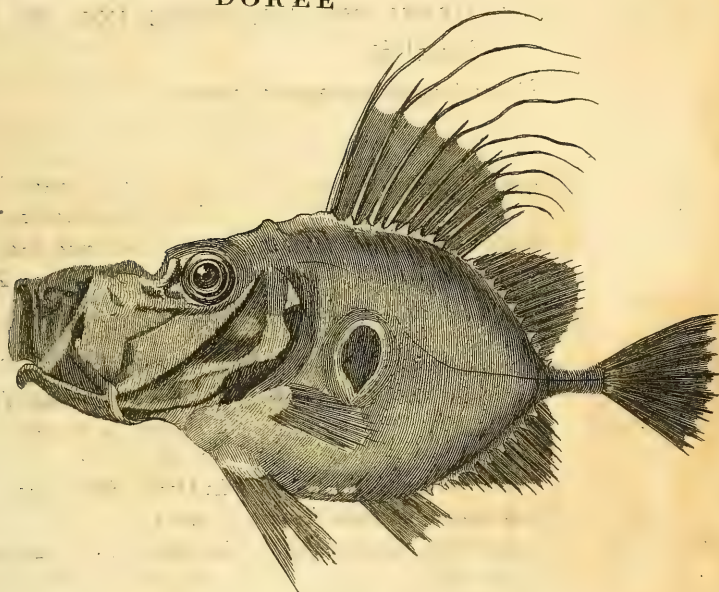
Le Zee forgeron. *De la Ce-*

pède Hist. des Poissons, iv.

577.

SUPERSTITION hath made the Doree rival to the Hadock, for the honor of having been the fish out of whose mouth St. *Peter* took the tribute-money, leaving on its sides those incontestable proofs of the identity of the fish, the marks of his finger and thumb. It is rather

DORÉE



difficult at this time to determine on which part to decide the dispute; for the Doree likewise asserts an origin of its spots of a similar nature, but of a much earlier date than the former. *St. Christopher*,* in wading through an arm of the sea, having caught a fish of this kind *en passant*, as an eternal memorial of the fact, left the impressions on its sides to be transmitted to all posterity.

In our own country it was very long before this fish attracted our notice, at least as an edible one. We are indebted to that judicious actor and *bon vivant* the late Mr. *Quin*, for adding a most delicious luxury to our table, who overcoming all the vulgar prejudices on account of its deformity, has effectually established its reputation.

This fish was supposed to be found only in the southern seas of this kingdom, but it has been discovered on the coasts of *Caernarconshire* and *Anglesey*. Those of the greatest size are taken in the Bay of *Biscay*, off the *French* coasts: they are also very common in the *Mediterra-*

PLACE.

* *Belon*, *Rondel*, also *Aldrovand de pisc.* 40. *St. Christopher* was of a *Colossal* stature, as is evident from his image in the church of *Nôtre Dame* at *Paris*, and a still larger at *Auxerre*: the last we think is near seventy feet high. His history is in his name, *Χριστοφορος*, being said to have carried our Saviour, when a child, over an arm of the sea.

nean; *Ovid* must therefore have styled it *rarus Faber*, on account of its excellency, not its scarcity.

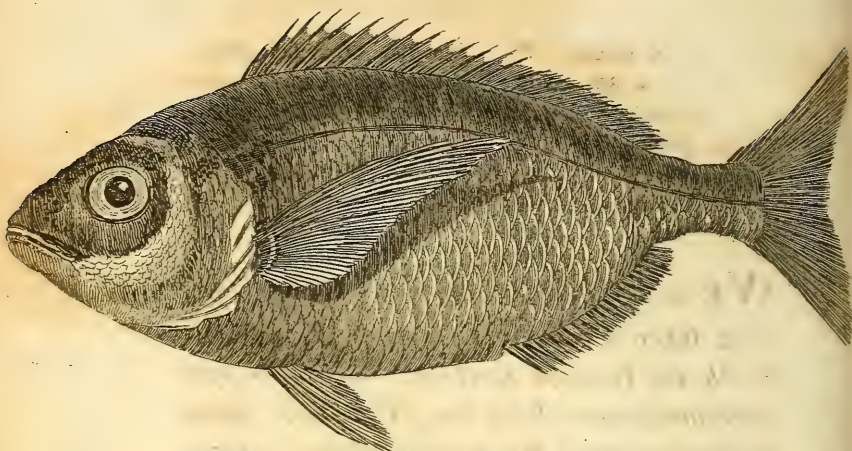
DESCRIP-
TION.

The form of this fish is hideous; its body is oval, and greatly compressed on the sides; the head large; the snout vastly projecting; the mouth very wide; the teeth very small; the eyes great; the irides yellow; the lateral line oddly distorted, sinking at each end, and rising near the back in the middle; beneath it on each side is a round black spot. The first dorsal fin consists of ten strong spiny rays, with long filaments, reaching far beyond their ends; the second is placed near the tail, and consists of twenty-four soft rays, the middlemost of which are the longest; the pectoral fins have fourteen rays, the ventral seven; the first spiny, the others soft; it has two anal fins; the first consists of four sharp spines, the second of twenty-two soft ones, and reaches very near the tail; the tail is very small in proportion to the body, round at the end, and consists of fifteen branched rays. The color of the sides is olive, varied with light blue and white, and while living is very resplendent, and as if gilt, for which reason it is called the Doree. The largest fish we have heard of, weighed twelve pounds.

CRIMINAL RECORD

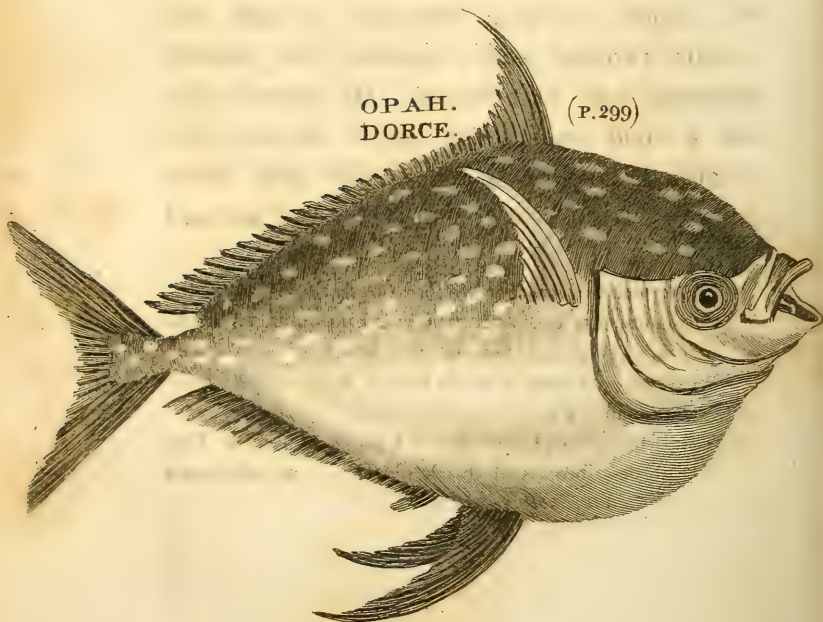
heard of weighed twelve pounds

LUNULATED
GILT HEAD. (P 327)



ОПАХ.
DORCE.

(P. 299)



M. J. G. S. del

Opah, or King-fish. <i>Ph.</i>	Zeus Luna. <i>Gm. Lin.</i> 1225.	2. OPAH.
<i>Trans. abr.</i> xi. 879. <i>tab.</i> v.	Poisson de Lune. <i>Duhamel</i>	
Zeus cauda bifurca, colore ar-	iii. 74. <i>tab.</i> 15.	
genteo purpureo splendens.	Le Chrysotose Lune. <i>De la</i>	
<i>Strom. Sondmor.</i> 323, 325.	<i>Cepede Hist. des Poissons,</i>	
<i>tab.</i> 1. <i>fig.</i> 20.	iv. 588.	

WE have only* five instances of this fish being taken in our seas, four of them in the *North*, viz. twice off *Scotland*, † once off *North-umberland*, one in *Filey-Bay*, *Yorkshire*; and a fifth was caught at *Brixham*, in *Torbay*, in 1772. The last weighed a hundred and forty pounds. The length was four feet and an half; the breadth two feet and a quarter; the greatest thickness, only four inches. Its general color was a vivid transparent scarlet varnish over burnished gold, bespangled with oval silver spots of various sizes; the breast was an hard

* The reverend *George Barry* informs us in his *History of the Orkney islands*, that the Opah is not very uncommon in those seas, and that several have been taken or driven on shore as well near the island of *Sanday* as in the bays of *Scapa* and *Kirkwall* on the Mainland. Ed.

† The fish engraved by Sir *Robert Sibbald*, *Hist. Scot. Tab.* 6. and thus described, is of this kind. *Piscis maculis aureis aspersus non scriptus, pollices 42 longus.*

bone, resembling the keel of a ship; the flesh looked, and tasted like beef.*

I find a more ample description of another, by Mr. *Robert Harrison*, of *Newcastle*.

DESCRIP-
TION.

Newcastle, Sept. 12, 1769. "On Saturday last was thrown upon the sands at *Blyth*, a very rare and beautiful fish, weighing between seventy and eighty pounds, shaped like the sea bream. The length was three feet and an half; the breadth from back to belly almost two feet; but the thickness from side to side not above six inches. The mouth small for the size of the fish, forming a square opening, and without any teeth in the jaws. The tongue thick, resembling that of a man, but rough and thick set with beards or prickles, pointing backwards, so that any thing might easily pass down, but could not easily return back, therefore these might serve instead of teeth to retain its prey. The eyes remarkably large, covered with a membrane, and shining with a glare of gold. The cover of the gills like the salmon. The body diminishes very much to the tail, which is forked, and expands twelve inches; the gill fins are broad, about eight inches long, and play

* This description was sent to me by a gentleman, who saw the fish soon after it was taken.

horizontally; a little behind their insertion the back fin takes its original, where it is about seven inches high, but slopes away very suddenly, running down very near the tail, and at its termination becomes a little broader; the belly fins are very strong, and placed near the middle of the body; a narrow fin also runs from the anus to the tail. All the fins, and also the tail, are of a fine scarlet; but the colors and beauty of the rest of the body, which is smooth and covered with almost imperceptible scales, beggars all description; the upper part being a kind of bright green, variegated with whitish spots, and enriched with a shining golden hue, like the splendor of a peacock's feather; this, by degrees, vanishes in a bright silvery, and near the belly the gold again predominates in a lighter ground than on the back."

GENUS XXXII. FLOUNDER.

BODY quite flat, and very thin.

EYES, both on the same side the head.

RAYs branchiostegous from four to seven.

* With the eyes on the right side.

- | | | |
|-------------|---|--|
| 1. HOLIBUT. | Hippoglossus. <i>Rondel.</i> 325. | Pleuronectes Hippoglossus. |
| | <i>Gesner pisc.</i> 669. | <i>Lin. syst.</i> 456. <i>Gm. Lin.</i> |
| | Heglbutte, Hilligbutte. <i>Scho-</i> | 1227. |
| | <i>nevelde</i> , 62. | Halg-flundra. <i>Faun. Succ.</i> |
| | Holibut, Septentr. Anglis Tur- | No. 329. <i>Gronov. Zooph.</i> |
| | bot. <i>Wil. Ichth.</i> 99. <i>Raii</i> | No. 247. |
| | <i>syn. pisc.</i> 33. | Le Fletan. <i>Bloch ichth.</i> ii. 44. |
| | Pleuronectes oculis a dextris, | <i>tab.</i> 47. |
| | totus glaber. <i>Arted. synon.</i> | <i>De la Cepede Hist. des Pois-</i> |
| | 31. | <i>sons</i> , iv. 601. |

THIS is the largest of the genus: some have been taken in our seas weighing from one to three hundred pounds; but much larger are found in those of *Newfoundland*, *Greenland*, and *Iceland*, where they are taken with a hook and line in very deep water. They form a part of the food of the *Greenlanders*,* who cut them into large slips, and dry them in the sun.

* *Crantz's Hist. Greenl.* i. 98.

They are common in the *London* markets, where they are exposed to sale cut into large pieces; but are very coarse eating, excepting the part which adheres to the side fins, which is extremely fat and delicious, but surfeiting. They are the most voracious of all flat fish. Two instances occurred in one year of their swallowing the lead weight at the end of a line, with which the seamen were sounding the bottom from on board a ship, one off *Flamborough Head*, the other going into *Tinmouth Haven*: the latter was taken, the other disengaged itself.

The holibut, in respect to its length, is the narrowest of any of this genus except the sole. It is perfectly smooth, and free from spines either above or below. The color of the upper part is dusky; beneath of a pure white. We do not count the rays of the fins in this genus, not only because they are so numerous, but because nature hath given to each species characters sufficient to distinguish them by.

DESCRIP-
TION.

“ The body on the upper side thickens abruptly from the dorsal fin; the color brown with marbled spots of a lighter shade. The eyes are supported upon a moveable process rising out of a large oval frame or socket; the irides bright yellow. The side line plainly

marked but smooth, bent at its commencement near the gills; the dorsal fin commences near the right eye, and consists of ninety-seven rays; the tail is forked. The length of a specimen from the *Land's End*, which weighed fifty-six pounds, was four feet from the nose to the root of the tail, its breadth, between the dorsal and anal fins, eighteen inches and an half. The flesh is used principally in *Cornwall* for bait." E. H.

These flat fishes swim sideways; for which reason *Linnæus* hath styled them *Pleuronectes*.

- | | |
|---|--|
| 2. PLAISE. <i>Platessa?</i> <i>Ausonii Epist. ad Theon.</i> 62. | <i>lateribus glabris, spina ad anum. Arted. Synon.</i> 30. |
| Le Quarlet. <i>Belon</i> , 139. | <i>Pleuronectes Platessa. Lin.</i> |
| Quadratus. <i>Rondel.</i> 318. | <i>Syst.</i> 456. <i>Gm. Lin.</i> 1228. |
| <i>Gesner pisc.</i> 665. | <i>Gronov. Zooph.</i> No. 246. |
| Scholle, <i>Pladise. Schonevelde</i> , 61. | <i>Skalla, Rodsputta. Faun. Suec.</i> No. 328. |
| Plaise. <i>Wil. Ichth.</i> 96. <i>Raii Syn. pisc.</i> 31. | <i>La Plie. Bloch ichth.</i> ii. 29. <i>tab.</i> 42. |
| <i>Pleuronectes oculis et tuberculis sex a dextra capitis,</i> | <i>De la Cepede Hist. des Poissons,</i> iv. 628. |

THESE fishes are very common on most of our coasts, and sometimes taken of the weight of fifteen pounds; but they seldom reach that size, one of eight or nine pounds being reckoned

a large fish. The best and largest are taken off *Rye*, on the coast of *Sussex*, and also off the *Dutch* coasts. They spawn on the beginning of *February*.

They are very flat, and much more square than the preceding. Behind the left eye is a row of six tubercles, that reaches to the commencement of the lateral line. The upper part of the body and fins is of a clear brown, marked with large bright orange-colored spots: the belly is white.

DESCRIP-
TION.

Le Flez. *Belon*, 141.

Passeris tertia species. *Rondel.*

319. *Gesner pisc.* 666, 670.

Struff-butte. *Schonevelde*, 62.

Flounder, Fluke, or But.

Wil. Ichth. 980. *Raii syn.*

pisc. 32.

Pleuronectes oculis a dextris,

linea laterali aspera, spi-

nulis supiné ad radices pin-

narum, dentibus obtusis.

Arted. synonym. 31.

Pleuronectes Flesus. Lin. syst. 3. COMMON.

457. *Gm. Lin.* 1229.

Gronov. Zooph. No. 248.

Flundra, *Slatt-skadda. Faun.*

Suec. No. 327.

Le Flez. *Bloch Ichth.* ii. 36.

tab. 44.

De la Cope Hist. des Pois-

sons. iv. 633.

THE flounder inhabits every part of the *British* sea, and even frequents our rivers at a great distance from the salt waters; and for this reason some writers call it the *Passer fluviatilis*. It never grows large in our rivers, but is reckoned sweeter

than those which live in the sea. It is inferior in size to the plaise, for we never heard of any that weighed more than six pounds.

DESCRIP-
TION.

It may very easily be distinguished from the plaise, or any other fish of this genus, by a row of sharp small spines that surround its upper sides, and are placed just at the junction of the fins with the body. Another row marks the side-line, and runs half way down the back. The color of the upper part of the body is a pale brown, sometimes marked with a few obscure spots of dirty yellow; the belly is white.

We have met with a variety of this fish with the eyes and lateral line on the left side. *Linnæus* makes a distinct species of it under the name of *Pleuronectes Passer*;* but since it differs in no other respect from the common kind, we agree with Doctor *Gronovius* in not separating them.

* This is *le Moineau de mer* of *Bloch* (*Ichth.* ii. 54. *tab.* 50.) who coincides with *Linnæus* in considering it as a distinct species; it certainly differs materially in form, and we conceive it probable that the true *Pleuronectes Passer* may be unknown on our shores, while the flounder, with eyes on the left side, is extremely common. *Duhamel* distinguishes flat fishes under these circumstances, *viz.* with eyes placed contrary to their usual direction, by the appellation of “*contournés*.” This change appears confined to those which have the eyes usually on the right side. The Turbot and Pearl are often found *double*, or with the under side resembling the upper. ED.

“ Each spine at the base of the fins, consists of a small bony tubercle, covered with many sharp points, sometimes more or less bent. The side line is slightly bent at the commencement. The body tapers towards the tail which is somewhat rounded : in the dorsal fin are fifty-two rays. The variety having the eyes placed on the left side is very common : after examining several specimens, (no less than six were procured at the same time at one place of sale,) no other difference was perceived. The *Pleuronectes roseus*, Rose colored Flounder of the *Naturalist's Miscellany*, tab. 238, appears to differ from the common species in no other respect than in its color ; if so, it can at most claim no greater distinction than that of a variety. E. H.”

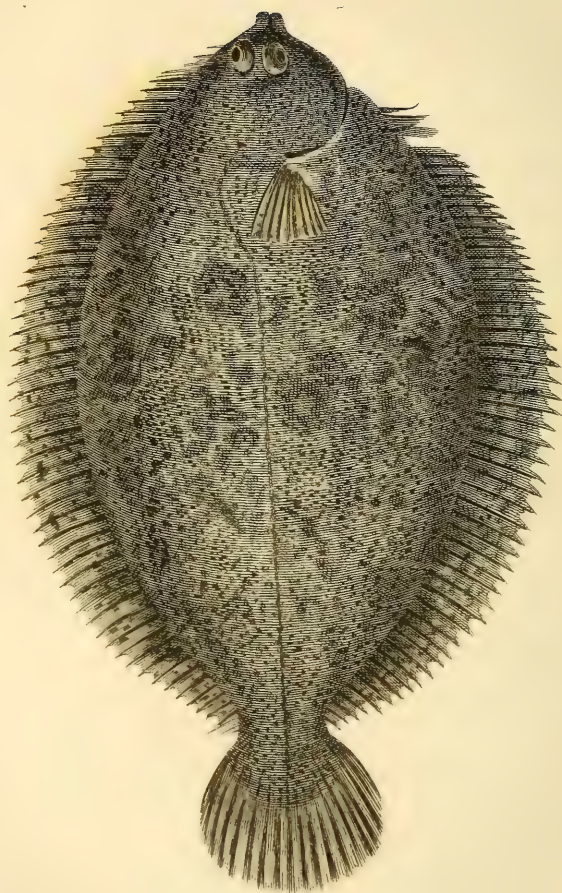
4. DAB. La Limande. *Belon*, 142. Pleuronectes Limanda. Pl. oculis dextris, squamis ciliatis, spinulis ad radicem pinarum dorsi, anique. *Lin. syst.* 457. *Gm. Lin.* 1231.
- Passer asper, sive squamosus. *Rondel.* 319. *Gesner pisc.* 665.
- Dab. *Wil. Ichth.* 79. *Raii syn. pisc.* 32.
- Pleuronectes oculis a dextra, squamis asperis, spina ad anum, dentibus obtusis. *De la Cope Hist. des Poissons.* iv. 621.
- Arted. synonym.* 33.
- La Limande. *Bloch ichth.* ii. 42. *tab.* 46.

THE dab is found with the other species, but is less common. It is in best season during *February, March, and April*: it spawns in *May and June*, and becomes flabby and watery the rest of summer. It is superior in goodness to the plaice and flounder, but far inferior in size.

DESCRIP-
TION.

It is generally of an uniform brown color on the upper side, though sometimes clouded with a darker. The scales are small and rough, which is a character of this species. The lateral line is extremely incurvated at the beginning, then goes quite strait to the tail. The lower part of the body is white.

SMEARDAB FLOUNDER.



Rhombus lævis <i>Cornubiensis</i> maculis nigris, a Kit. Mr. <i>Jago. Raii syn. pisc.</i> 162. <i>fig. 1.</i> Smear-dab. <i>Br. Zool.</i> 4to. iii. 202.	Pleuronectes lævis. Pl. oculis dextris, corpore glaberrimo, oculis fere contiguïs, ore angusto, labris exertis. <i>Ed.</i> <i>Hanmer. Mss.</i>	5. SMEAR- DAB.
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WE found one of this species at a fishmonger's in *London*, where it is known by the name of the *Smear-dab*, on account of the body being covered with a thick slime.

It was a foot and a half long, and eleven inches broad between fin and fin on the widest part. The head appeared very small, as the dorsal fin began very near its mouth, and extended very near to the tail; it consisted of seventy-nine rays, and was of a yellowish color spotted with dusky. The eyes were pretty near each other; the irides pale yellow. The mouth full of small teeth. The lateral line slightly incurvated for the first two inches from its origin, then continued strait to the tail. The back was covered with small smooth scales, was of a light brown color, spotted obscurely with yellow and dusky; the margins of the gill-covers yellow. The belly white, and marked with five large dusky spots.*

DESCRIP-
TION.

* Not a constant character. *Ed.*

It was a fish of goodness equal to the common dab.*

“ The lips are projecting. The dorsal fin consists of about ninety rays: the tail is rounded. The two principal fins have no pointed extension of breadth near the center. The length of a specimen from *Mount's Bay*, was twelve inches; the breadth five inches and an half. The greatest common weight is about two pounds. It is very frequent on the coast of *Cornwall*. Of the few that are brought to *London*, the principal part are from the trawls of *Brixham*, and the *Sussex* coast: they are in season during the autumn and winter months. At *Bath* they are known by the name of the Lemon Sole, at *Plymouth*, of the Merry Sole, at *Looe*, of the Kit, and at *Penzance*, of the Queen, or Queen Fish. E. H.”

* This is probably the *Vraie Limandelle* of *Duhamel Tr. des Pesches*. iii. sect. 9. tab. 6. fig. 3. 4. It is also mentioned by Mr. *Neill* in the list of fishes found in the *Frith of Forth*, under the name of *Pleuronectes microcephalus*, *Sand-fleuk*. *Mem. Wern. Soc.* 537. ED.

- Βαγλωσσος* *Athen. lib. viii. p.* Pleuronectes Solea. *Lin. syst.* 6. SOLE.
 288. *Oppian Halieut. i. 99.* 457. *Gm. Lin. 1232.*
La Sole. Belon, 142. *Gronov. Zooph. No. 251.*
Buglossus. Rondel. 320. Ges- Tunga, Sola. *Faun. Suec.*
ner pisc. 666. *No. 326.*
Tungen. Schonevelde, 63. *La Sole. Bloch Ichth. ii. 39.*
Pleuronectes oculis a sinistra *tab. 45.*
corpore oblongo, maxilla *De la Cepede Hist. des Pois-*
superiore longiore, squamis *sons. iv. 623.*
utrinque asperis. Arted. syn.
 32.

THE sole is found on all our coasts, but those on the western shores are much superior in size to those of the north. On the former they are sometimes taken of the weight of six or seven pounds, but towards *Scarborough* they rarely exceed one pound; if they reach two, it is extremely uncommon. They are usually taken in the trawl-net: they keep much at the bottom, and feed on small shell fish.

It is of a form much more narrow and oblong than any other of the genus. The irides are yellow; the pupils of a bright sapphirine color; the scales are small, and very rough; the upper part of the body is of a deep brown; the tip of one of the pectoral fins black; the under part of the body is white; the tail rounded at the end.

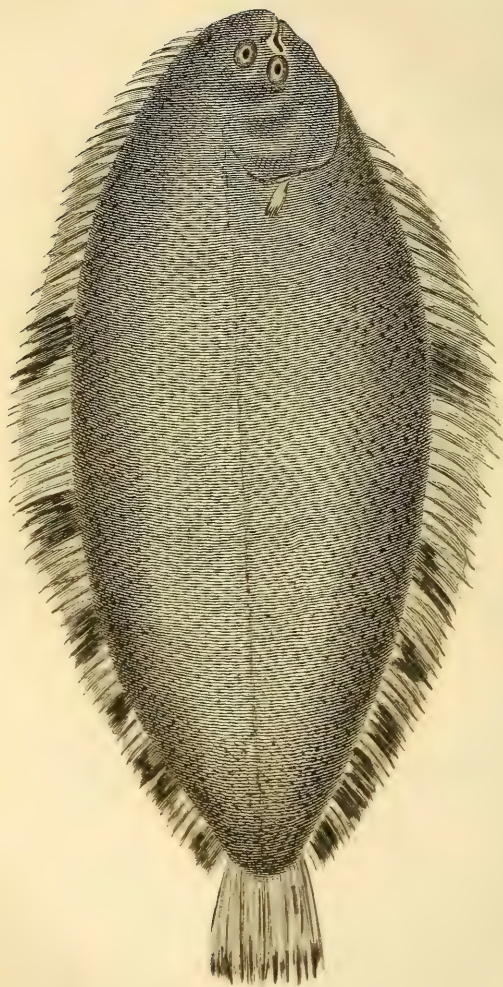
DESCRIP-
TION.

It is a fish of a very delicate flavour ; but the small soles are much superior in goodness to large ones. * The chief fishery for them is at *Brixham* in *Torbay*.

“ The upper side is uniformly reticulated over the body, head, and fins, with a small network pattern of a darker color, and sometimes marked with cloudy spots ; the scales fringed at the outer edge with a row of transparent points. The side line much bent at its commencement near the right eye. The *Torbay* trawl boats will at particular seasons range for them as far as the *Land's End*, and even to the islands of *Scilly*, and then it is not unusual to take them of two feet or more in length. They are in season all the year, the month of *May* excepted. The dried skins are much used for fining liquors, and are for that purpose a good substitute for isinglass. E. H.”

* By the antient laws of the *Cinque* ports, no one was to take soles from the 1st of *November* to the 15th of *March* ; neither was any body to fish from sun-setting to sun-rising, that the fish might enjoy their night-food.

RED BACK FLOUNDER



Pleuronectes Lingula. Pl. oculis dextris, corpore lingulato, squamis ciliatis, linea laterali recta. <i>E. Hanmer. Mss.</i>	Solea parva seu Lingula. <i>Ron-</i> 7, RED BACK. <i>del.</i> 324. <i>Gesner pisc.</i> 669. <i>Raii syn. pisc.</i> 34.
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“ **BODY**, tongue-shaped (*lingulatum*) rather thick and fleshy at the edges ; color of the upper side a very light brown, tinged with red ; the scales shewing a pattern, something like that of the sole, though in proportion coarser ; the dorsal, anal, and caudal fins marked with brown or blackish spots, which extend some lines to the body of the fish ; scales rough, fringed at the outer edge with red transparent points ; the eyes and mouth, both in shape and position, resemble those parts in the sole ; the side line from its commencement near the gills to its termination at the tail quite straight ; the dorsal fin, which originates near the right eye, and extends nearly to the tail, consists of about sixty-eight rays ; the tail rounded. The length of a specimen from the coast near *Plymouth*, was six inches and three quarters, the breadth two inches and an half.

DESCRIP-
TION.

“ As in general character it much resembles the sole, it may be worth while to observe, that it differs from that fish—1, In color.—2, In shape,

being* much thicker in proportion to its length, particularly at the margin of the body.—3, In its scales, which are shorter and wider, having on their circular edges from twenty-one to twenty-six points, instead of sixteen or eighteen as in the sole.—4, In having a straight side line.—5, In the dorsal fin, which consists of about sixty-eight rays only, whereas the sole has usually eighty-four.—6, In the terminations of the dorsal and anal fins, which do not approach the tail so closely as they do in the sole.—7, In size, for it is seldom known to exceed the length of nine inches.—8, In marketable estimation, for though there is some resemblance to the texture and flavour of the sole, it is inferior in richness and firmness of flesh.

“ It is common in the spring upon the coast near *Plymouth*. E. H.”

* *Duhamel Tr. des Pesches. iii. part. 2. sect. 9. tab. 3. fig. 3.* gives the figure of a fish under the name of *Pole panachée*, which resembles this species. ED.



TURBOT. FLOUNDER.



** With the eyes on the left side.

Rhombus. <i>Ovid Halieut.</i>	Pleuronectes oculis a sinistra, 8. TURBOT.
Le Turbot. <i>Belon</i> , 134.	corpore aspero <i>Arted. synon.</i> 32.
Rhombus aculeatus. <i>Rondel.</i>	
310. <i>Gesner pisc.</i> 661.	Pleuronectes maximus. ¹ <i>Lin.</i>
Steinbutt, Torbutt, Treenbutt, Dornbutt. <i>Schonevelde</i> , 60.	<i>syst.</i> 459. <i>Gm. Lin.</i> 1236.
	<i>Gronov. Zooph. No.</i> 254.
Turbot, in the north a Bret. <i>Wil. Ichth.</i> 94.	Butta. <i>Faun. Suec. No.</i> 325.
	Le Turbot. <i>Bloch Ichth.</i> ii. 51. <i>tab.</i> 49.
Rhombus maximus asper non squamosus. <i>Raii syn. pisc.</i> 31.	<i>De la Ceppe Hist. des Poissons.</i> iv. 645.

TURBOTS grow to a very large size; we have seen them of three and twenty pounds weight, but have heard of some that weighed thirty. They are taken chiefly off the north coast of *England*, and others off the *Dutch* coast; but we believe the last has, in many instances, more credit than it deserves for the abundance of its fish.

The large turbot, and several other kinds of flat fish, are taken by the hook and line, for they lye in deep water: the method of taking them in wares, or staked nets, is too precarious to be depended on for the supply of our great markets, because it is by mere accident that the

SIZE.

FISHERY.

great fish stray into them. It is a misfortune to the inhabitants of many of our fishing coasts, especially those of the north part of *North Wales*, that they are unacquainted with the most successful means of capture: for their benefit, and perhaps that of other parts of our island, we shall lay before them the method practised by the fishermen of *Scarborough*, as it was communicated to us by Mr. *Travis*.

LINES. When they go out to fish, each person is provided with three lines, which are fairly coiled upon a flat oblong piece of wicker-work; the hooks baited, and placed very regularly in the centre of the coil. Each line is furnished with fourteen score of hooks, at the distance of six feet two inches from each other; these are fastened to the lines upon sneads of twisted horse-hair, twenty-seven inches in length. When fishing there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length nearly three miles, and furnished with 2520 hooks. An anchor and a buoy are fixed at the first end of the line, and one more of each at the end of each man's lines; in all four anchors, which are commonly perforated stones, and four buoys made of leather or cork. The line is always laid across the current. The

tides of flood and ebb continue an equal time upon the coast, and when undisturbed by winds run each way about six hours. They are so rapid that the fishermen can only shoot and haul their lines at the turn of tide; and therefore the lines always remain upon the ground about six hours.* The same rapidity of tide prevents their using hand-lines; and therefore two of the people commonly wrap themselves in the sail, and sleep while the other keeps a strict look-out, for fear of being run down by ships, and to observe the weather; for storms often rise so suddenly, that it is with extreme difficulty they can escape to the shore, leaving their lines behind.

The coble is twenty feet six inches long, and five feet extreme breadth. It is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purpose of encountering a mountainous sea: a sail is hoisted when the wind suits.

COBLE.

The five-men boat is forty feet long and fifteen broad, and of twenty-five tons burthen: it is so called, though navigated by six men and a boy, because one of the men is commonly hired

* In this time the Glutinous Hag, p. 109, will frequently penetrate the fish that are on the hooks, and entirely devour them, leaving only the skin and bones.

to cook, &c. and does not share in the profits with the other five. All our able fishermen go in these boats to the herring fishery at *Yarmouth* the latter end of *September*, and return about the middle of *November*. The boats are then laid up until the beginning of *Lent*, at which time they go off in them to the edge of the *Dogger*, and other places, to fish for turbot, cod, ling, skates, &c. They always take two cibles on board, and when they come upon their ground, anchor the boat, throw out the cibles, and fish in the same manner as those do who go from the shore in a cible; with this difference only, that here each man is provided with double the quantity of lines, and instead of waiting the return of tide in the cible, returns to the boat and baits their other lines; thus hawling one set, and shooting another every turn of tide. They commonly run into harbour twice a week to deliver their fish. The five-men boat is decked at each end, but open in the middle, and has two large lug-sails.

BAIT. The best bait for all kinds of fish is fresh herring cut in pieces of a proper size; and notwithstanding what has been said to the contrary, they are taken here at any time in the winter, and all the spring, whenever the fishermen put down their nets for that purpose. The

five-men boats always take some nets for that end. Next to herrings are the lesser lampreys,* which come all winter by land-carriage from *Tadcaster*. The next baits in esteem are small hadocks cut in pieces, sand worms, mussels, and limpets (called here *Flidders*;) and lastly, when none of these can be had they use bullock's liver. The hooks used here are much smaller than those employed at *Iceland* and *Newfoundland*. Experience has shewn that the larger fish will take a living small one upon the hook, sooner than any bait that can be put on; therefore they use such as the small fish can swallow. The hooks are two inches and an half long in the shank, near an inch wide between the shank and the point. The line is made of small cording, and is always tanned before it is used. Turbots, and all the rays, are extremely delicate in their choice of baits. If a piece of herring or hadock has been twelve hours out of the sea, and then used as bait, they will not touch it.

This and the pearl are of a remarkable square form; the color of the upper part of the body is cinereous, marked with numbers of black spots

DESCRIP-
TION.

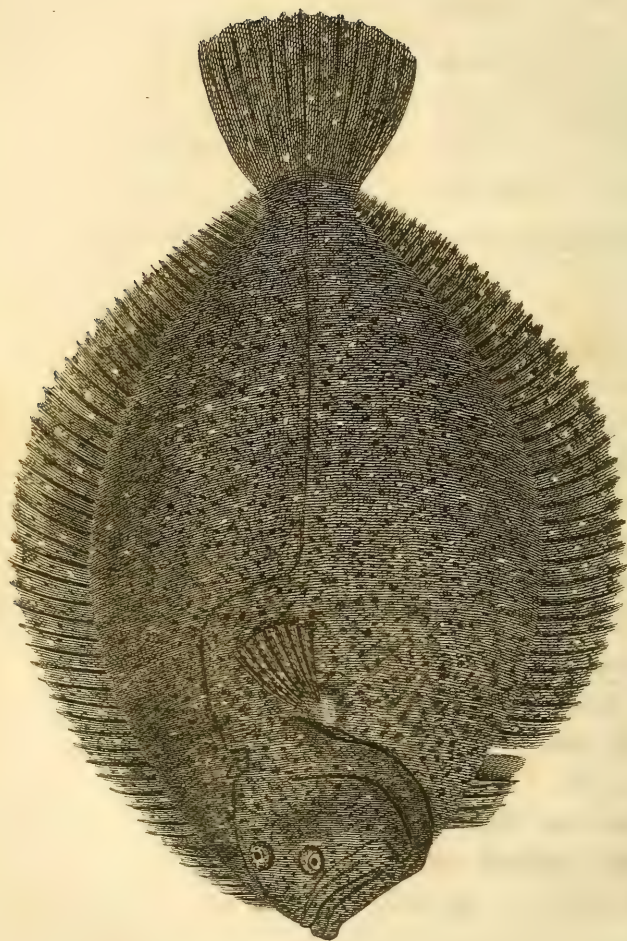
* The *Dutch* also use these fish as baits in the turbot fishery, and purchase annually from the *Thames* fishermen as much as amounts to 700*l.* worth, for that purpose.

of different sizes ; the belly is white ; the skin is without scales, but greatly wrinkled, and mixed with small short spines, dispersed without any order.

“ The eyes small and sunk ; the margin of the eye-lid highly burnished ; the side line much bent near the head ; the dorsal fin originates near the mouth ; the tail rounded.

“ Of all the known species of the genus, this, in point of quality, ranks eminently the first, and in size is second only to the Holibut. On the western coast the greatest common weight is twenty pounds. At *London* the supply of this fish is said to be as follows : *January* to *March* inclusive, trawled fish from *Torbay* and other parts of the Channel ; *April* and *May* trawled fish from off the *Texel* ; *June* to *August* inclusive, caught by the line upon the *Dutch* coast. In best season during the summer months. E. H.”

PEARL FLOUNDER.



- La Barbue. *Belon*, 137.
 Rhombus lævis. *Rondel.* 312.
Gesner pisc. 662.
 Schlichbutt. *Schonevelde*, 60.
 Rhombus non aculeatus squa-
 mosus *the Pearl. Londinens.*
Cornub. Lug-aleaf. Wil.
Ichth. 95. *Raii Syn. pisc.*
 31.
 Pleuronectes oculis a sinistris,
 corpore glabro. *Arted. Syn.* 9. PEARL.
 31.
 Pleuronectes Rhombus. *Lin.*
Syst. 458. *Gm. Lin.* 1236.
Gronov. Zooph. No. 149.
 Pigghvarf. *It. W. Goth.* 178.
 La Barbue. *Bloch ichth.* ii. 34.
tab. 43.
 La Pleuronecte carralet. *De la*
Cepede Hist. des Poissons.
iv. 649.

IT is frequently found in the *London* markets, but is inferior to the turbot in goodness.

The irides are yellow; the skin is covered with small scales, but is quite free from any spines or inequalities. "The color of the upper side is brown of different shades, more or less distinctly marbled or spotted in different specimens, generally with large and small spots of a deeper color, and many very small white dots irregularly sprinkled over the surface; the under side is of a pure white and scaly. The side line much bent near the head; the dorsal and anal fins less arched than those of the turbot; the tail rounded. Its proportional breadth fifty-six;* its body therefore narrower

DESCRIP-
TION.

* See *Appendix* No. IV. Ed.

and less rhomboidal than the turbot.* This fish is now more generally called Brill than Pearl: it probably derived the latter name from the white pearly dots with which the upper side is sometimes very distinctly marked. Upon the coasts of *Devonshire* and *Cornwall* it is known by the name of Kite.

“ It is in season during the winter and spring months. The *London* supply is first from *Torbay*, and the western coast; afterwards principally from *Susser*. The greatest common weight eight pounds.” E. H.

- | | | |
|-------------------|---|---|
| 10. TOP-
KNOT. | Pleuronectes punctatus. Pl.
oculis sinistris, corpore lato
asperoque. <i>Gm. Lin.</i> 1235. | Le Targeur. <i>Bloch ichth.</i> vi.
23. tab. 188.
<i>Duh. Tr. des peches</i> iii. 266.
tab. 5. f. 4. |
|-------------------|---|---|

DESCRIPTION. “ **BODY**, the fins included, is very square in its form. Color of the upper side a dark and somewhat reddish brown, with many star-shaped or round spots of a darker color, which also seem red when the light passes through them; some are large; the smaller ones of different

* The *Linnaean* specific name *Rhombus* does not seem better adapted to this species than does that of *maximus* to the turbot. E. H.

TOP KNOT FLOUNDER.



sizes are thickly scattered over the surface ; one remarkable black ribband-shaped mark or band crosses the head nearly in a line with the eyes ; the scales are very rough, small, closely set, and ciliated with points. The eyes are placed in round sockets and are rather prominent ; the pupil black ; the irides a bright sea-green. The mouth protrusile, opening wide, and thickly set with teeth in both jaws. The side line much bent near the head. The dorsal and anal fins gradually lengthen towards the tail, near which they shorten and embrace the lower side of it, when they almost meet ; the ventral and anal fins are united by a continuation of the skins that cover them (a circumstance not noticed in former descriptions) ; at this junction there is a passage to the vent, which is at the external margin. The tail is rounded. The length of a specimen from the *Plymouth* coast was five inches and three quarters, the breadth three inches and a quarter.

“ Upon the coasts of *Denmark* and *Norway*, where it is better known than with us, it is said to be held in much estimation. Our specimen was taken in the spring near *Plymouth* ; the fishermen had no name for it.” E. H.

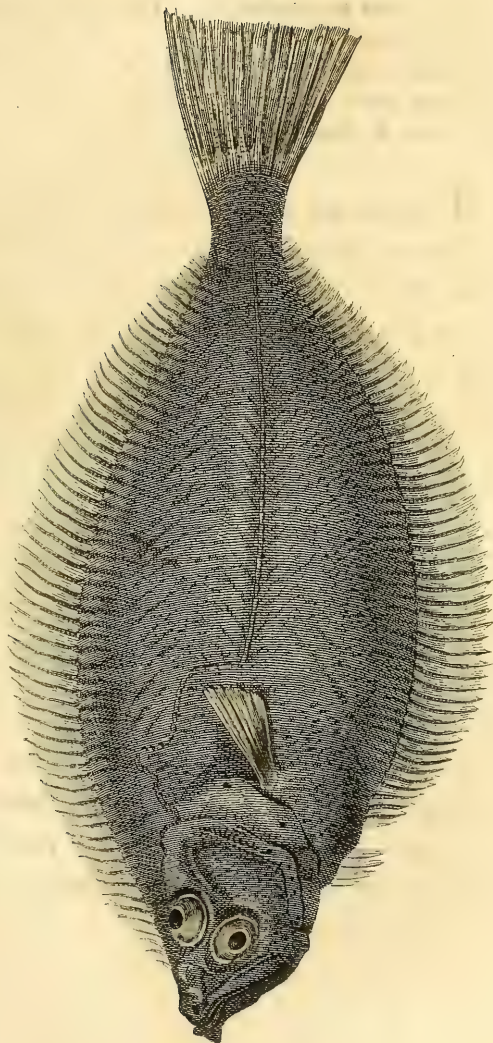
11. WHIFF. *Pleuronectes pseudopalus*. Pl. Passer *Cornubiensis* asper, mag-
 oculis sinistris, corpore ob- no oris hiatu. Mr. Jago.
 longo, maxilla inferiore lon- *Raii syn. pisc.* 163. fig. 2.
 giore, pinna caudæ fere qua- *Tour in Wales, ed.* 1810. i.
 drata. *E. Hanmer. Mss.* 29. tab. 3.

DESCRIP-
TION.

THIS bears some resemblance to the Holibut. One was brought to me by my fisherman, *October* 31, 1775. Its length was eighteen inches; the greatest breadth not seven, exclusive of the fins; the mouth extremely large; the teeth very small; the under jaw hooks over the upper; the eyes large, and placed on the left side. The scales great and rough; the side line uncommonly incurvated at the beginning, after making a sharp angle, it goes strait to the tail, and is tuberculated; the tail is rather rounded. The color of the upper part of the body is cinereous brown, clouded in parts, and obscurely spotted; the under side white, tinged with red.

“ The whole fish somewhat pellucid; scales easily separated from the skin; head and jaws large. The eyes elevated, the pupils purple; the irides yellow, with an effulgence resembling the *Pseudopalus* or Cat’s eye. The dorsal fin which originates near the mouth, consists of

WHIFF FLOUNDER



SCALD BACK FLOUNDER.



eighty-four* rays. The tail, which at its extremity is nearly straight or square, consists of about fifteen rays; each ray towards the end branches into smaller ones. The rays of all the fins are united by a thin and almost colorless membrane. The length of a specimen from *Mount's-bay* was fifteen inches, its breadth six inches. It is very common at *Mount's Bay*, the *Land's End*, and the neighboring part of *Cornwall*, where it is known by the name of the *Lantern*; at *Plymouth*, where it is less frequent, it is called *French Sole* or *Megrim*. Its flesh is considered of little value." E. H.

Pleuronectes casurus. Pl. cor-	Arnoglossus vel Solea lævis.	12. SCALD
pore oblongo, squamis deci-	Will. ichth. 102. tab. F. 8.	FISH.
duis, maxillis æqualibus,	f. 7.?	
pinna caudæ rotundata. E.	Raii syn. pisc. 34. 4.?	
Hanmer Mss.	Rondel. 324. Gesn. pisc. 668.?	

“THE color of the upper side a pale brown or dirty white. The body has something of the same pellucid appearance as the *Lantern*,

DESCRIP-
TION.

* “The reverend *Hugh Davies* counted, on a specimen caught on the coast of *Anglesey*, eighty-one rays on the dorsal fin, twelve on the pectoral, five on the ventral, sixty-four on the anal, and seventeen on the tail. ED.

though in a less degree. Head rather small; the jaws of equal length, blunt; the lateral line bent near the head. The dorsal fin consists of eighty-two rays, as does the anal, which reaches to the tail; the pectoral of ten rays; a double row of rays, five in each, form the ventral fins; behind them is one or more short and sharp spines; the tail is rounded at the extremity; the rays of all the fins, including those of the tail, are bristly, and connected by a thin film or pellicle, which is easily broken. The scales are so deciduous, that the friction of the trawl alone is sufficient to remove them; when taken out of the net they are usually dead, and in that bare state which gives some propriety to the name they are known by of *Scaldfish*. They seem only to be known at *Plymouth*, and occur there very rarely. Their length is rather more than five inches, their breadth not exceeding two inches; and are probably the smallest of the *English* species, and of a corresponding value." E. H.*

* The editor has to express his obligations to *Edward Hammer*, Esq. of *Stockgrove*, for the valuable additions distinguished by the above initials. To the same friend he is indebted for farther observations on this genus, which are inserted in the Appendix. No. IV. Ed.

GENUS XXXIII. GILT-HEAD.

GILLS covers scaly.

RAYs branchiostegous five.

TEETH fore sharp, grinders flat.

FIN one dorsal, reaching the whole length of the back.

TAIL forked.

Xgusoφevς. *Oppian. Halieut.*
i. 169.

Chrysophrys. *Ovid. Halieut.*
iii.

Aurata. *Plinii, Lib. ix. c. 16.*

La Dorade. *Belon 186. Chrysophry.*
Caii opusc. 112.

Aurata. *Rondel. 115. Gesner*
pisc. 110. 112.

Gilt-head or Gilt-poll. *Wil.*
Ichth. 307. Raii syn. pisc.
131.

Sparus dorso acutissimo, linea
arcuata inter oculos. Arted.
synon. 63.

Sparus lunula aurea inter ocu-
los. Lin. syst. 467. Gm.
Lin. 1276. Gronov. Zooph.
No. 220.

La Dorade. Bloch ichth. viii.
43. tab. 266.

Le Spare Dorade. De la Ce-
pede Hist. des Poissons, iv.
57.

1. LUNU-
LATED.

THIS is one of the *pisces saxatiles*, or fishes that haunt deep waters on bold rocky shores: those that form this genus, as well as the following, feed chiefly on shell fish, which they comminute with their teeth before they swallow

them. The teeth of this genus in particular are extremely well adapted for that purpose, the grinders being flat and strong, like those of certain quadrupeds; besides those are certain bones in the lower part of the mouth, which assist in grinding their food.

They are but coarse fishes; nor did the *Romans* hold them in any esteem, except they had fed on the *Lucrine* oyster.

*Non omnis laudem pretiumque AURATA meretur,
Sed cui solus erit concha LUCRINA cibus.**

No praise, no price a *Gilt-head* e'er will take,
Unfed with oysters of the *Lucrine* lake.

DESCRIP-
TION.

They grow to the weight of ten pounds. The form of the body is deep, not unlike that of a bream; the back is very sharp, and of a dusky green color; the irides of a silvery hue; between the eyes is a semilunar gold colored spot, the horns of which point towards the head; on the upper part of the gills is a black spot, beneath that another of purple. The dorsal fin extends almost the whole length of the back, and consists of twenty-four rays, the eleven first spiny, the others soft; this and the anal rise out of a shallow furrow; the pectoral fins

* *Martial. Lib. xiii. Ep. 90.*

consist of seventeen soft rays ; the ventral of six rays, the first of which is very strong and spiny ; the anal fin of fourteen ; the three first spiny ; the tail is much forked.

This fish takes its name from its predominant color ; that of the forehead and sides being as if gilt, but the last is marked lengthways with numbers of bright lines,

Pagrus? <i>Ovid. Halieut.</i> 107.	in sinum producta. <i>Arted.</i>	2. RED.
Le Pagrus. <i>Belon</i> 245.	<i>Synon.</i> 64.	
Pagrus. <i>Rondel.</i> 142. <i>Gesner</i>	<i>Sparus Pagrus. Lin. Syst.</i> 469.	
<i>pisc.</i> 656.	<i>Gm. Lin.</i> 1273.	
Sea Bream. <i>Wil. ichth.</i> 312.	Le Pagre. <i>Bloch ichth.</i> viii.	
<i>Raii Syn. pisc.</i> 131.	50. <i>tab.</i> 267.	
<i>Sparus rubescens, cute ad ra-</i>	<i>De la Cepede Hist. des Pois-</i>	
<i>dicem pinnarum dorsi et ani</i>	<i>sons, iv.</i> 93.	

THIS species grows to a size equal with that of the former ; its shape is much the same. The irides are silvery ; the inside of the covers of the gills, the mouth, and the tongue, are of a fine red ; the teeth small and pointed. At the base of the pectoral fins is a ferruginous spot. What is peculiar to this species is, that the skin at the end of the dorsal and anal fins is gathered up, and hides the last rays ; the scales are large ; the tail forked. The color of the whole body is red.

DESCRIP-
TION.

3. RAYAN. *Brama marina cauda forcipata.* *Blochichth.* viii. 75. tab. 273.
D. Jonston. Raii Syn. pisc. *Duhamel Tr. des Peches,* iii.
 115. 26. tab. 5. f. 1.
Lin. Tr. vii. 292. *De la Cepede Hist. des Pois-*
Sparus niger. Turt. Lin. i. sons, iv. 111.
 789. *Toothed Gilt-head. Br. Zool.*
Sparus Raii, La Castagnole. 4to. iii. 213.

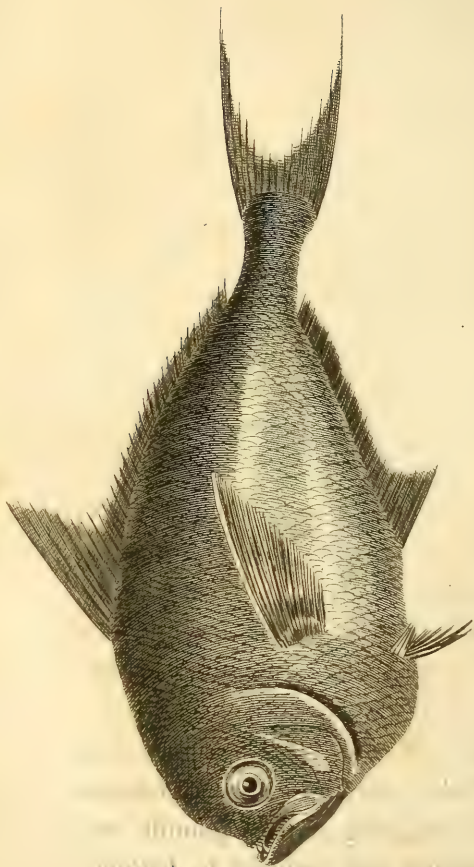
THIS species was communicated to Mr. Ray-
 by his friend Mr. *Jonston*, a *Yorkshire* gentle-
 man, who informed him it was found on the
 sands near the mouth of the *Tees*, *Sept.* 18,
 1681.*

DESCRIP-
 TION.

It was a deep fish, formed like a roach, twenty-
 six inches long, ten broad, and grew very slender
 towards the tail. The eyes were large, like
 those of quadrupeds; in the lower jaw were
 two rows of teeth, slender and sharp as needles;
 and on each side a slender canine tooth; in the
 upper only a single row of teeth; the aperture
 of the gills very large; the body scaly; in the
 middle of the back was one fin extending almost

* There is no instance on record of this rare fish having been
 seen on the *British* coast from the above period, till the year
 1799, when one was left by the tide in the inlet that runs up to
Kingsbridge on the south coast of *Devonshire*, and fortunately
 fell into the hands of Mr. *Montagu*. The length of this speci-
 men was sixteen inches, the depth five, the breadth of the back
 not above two. Mr. *Neill* states, that several have been taken of
 late years in the *Frith of Forth*. ED.

TOOTHED GILT-HEAD.



to the tail; the seven first rays high, the rest low; behind the vent was another, corresponding; both were entirely covered with scales over each other. The back black; the sides of a brighter color; the belly quite of a silvery brightness.

Synagris. <i>Belon</i> , 181.	Sparus varius dorso acuto den-	4. TOOTHED.
<i>Rondel. de Pisc.</i> i. 150.	tibus quatuor majoribus. <i>Ar-</i>	
Dentex sive Synodon. <i>Wil.</i>	<i>ted. Gen.</i> 36.	
<i>Ichth.</i> 312.	Le Dentè. <i>Bloch ichth.</i> viii.	
<i>Raii Syn.</i> 132.	58. <i>tab.</i> 268.	
Sparus dentex. <i>Gm. Lin.</i>	<i>Donovan Br. Fishes, tab.</i> 73.	
1278.		

[THIS species is chiefly distinguished by the numerous small teeth, and the four canine with which each jaw is furnished. Its general color is silvery shaded with yellow, but as it grows older it assumes a purplish tint; the head is partly silvery, partly of a greenish gold color; the back a reddish brown; the ventral and anal fins deep yellow; the pectoral inclining to red; the dorsal and tail yellow edged with blue.

DESCRIP-
TION.

It inhabits the *Red* and *Mediterranean* seas, and the coasts of *Jamaica*. Mr. *Donovan* states, that a specimen weighing sixteen pounds, was caught near *Hastings* and brought to *Billingsgate*; its colors were not so vivid as of those taken in warmer climates. ED.

GENUS XXXIV. WRASSE.

GILLS covers scaly.

RAYS branchiostegous unequal in number.*

TEETH conic, long and blunt at their ends. One tuberculated bone in the bottom of the throat: two above opposite to the other.

FIN one dorsal reaching the whole length of the back: a slender skin extending beyond the end of each ray.

TAIL rounded.

- | | |
|---|--|
| 1. ANTIENT. Vielle, Poule de mer, Gallot,
une Rosse. <i>Belon</i> 248. | <i>Labrus Tinca. Lin. syst.</i> 477.
<i>Gm. Lin.</i> 1289. |
| <i>Turdorum undecimum</i> genus.
<i>Rondel.</i> 179. <i>Gesner pisc.</i>
1019. | La Vieille ou Vielle. <i>Duhamel</i>
<i>Tr. des Pesches</i> , iii. 34.
<i>sect. 4. tab. 6. fig. 1.</i> |
| <i>Turdus vulgatissimus. Wil.</i>
<i>Ichth.</i> 319. | La Vielle de mer. <i>Bloch ichth.</i>
ix. 14. <i>tab.</i> 293.? |
| Wrasse, or Old Wife. <i>Raii</i>
<i>Syn. pisc.</i> 136. | Le Labre tancoide. <i>De la Ce-</i>
<i>pede Hist. des Poissons</i> , iii.
502. |
| <i>Labrus rostro sursum reflexo</i>
<i>cauda in extremo circulari.</i>
<i>Arted. synon.</i> 56. | |

* *Linnaeus* says six: this species had only four; the second, six; the third and fourth, five. We also find the same variation in the rays of the fins, the numbers being different in fishes of the same species, not only of this but of other genera.

THIS species is found in deep water adjacent to the rocks. It will take a bait, though its usual food is shell-fish, and small *crustacea*.

It grows to the weight of four or five pounds : DESCRIP-
TION. it bears some resemblance to a carp in the form of the body, and is covered with large scales. The nose projects ; the lips are large and fleshy, and the one turns up, the other hangs down ; the mouth is capable of being drawn in or protruded ; the irides are red ; the teeth are disposed in two rows ; the first are conic, the second very minute, and as if supporters to the others ; in the throat just before the gullet are three bones, two above of an oblong form, and one below of a triangular shape ; the surface of each rising into roundish protuberances ; these are of singular use to the fish, to grind its shelly food before it arrives at the stomach. The dorsal fin consists of sixteen sharp and spiny rays, and nine soft ones, which are much longer than the others ; the pectoral fins large and round, and are composed of fifteen rays ; the ventral of six ; the first sharp and strong ; the anal of three sharp spines, and nine flexible ; the tail is rounded at the end, and is formed of fourteen soft branch-

ing rays. The lateral line is much incurvated near the tail.

These fish vary infinitely in color; we have seen them of a dirty red, mixed with a certain duskiness; others most beautifully striped, especially about the head, with the richest colors, such as blue, red, and yellow. Most of this genus are subject to vary; therefore care must be taken not to multiply the species from these accidental tints, but to attend to the form which never alters.

The *Welsh* call this fish *Gwrach*, or the old woman; the *French*, *la Vieille*; and the *English* give it the name of *Old Wife*.

2. BALLAN. *Neill's Orkney islands*. 43. *Br. Zool.* 4to. iii. 216. *tab.* 44.

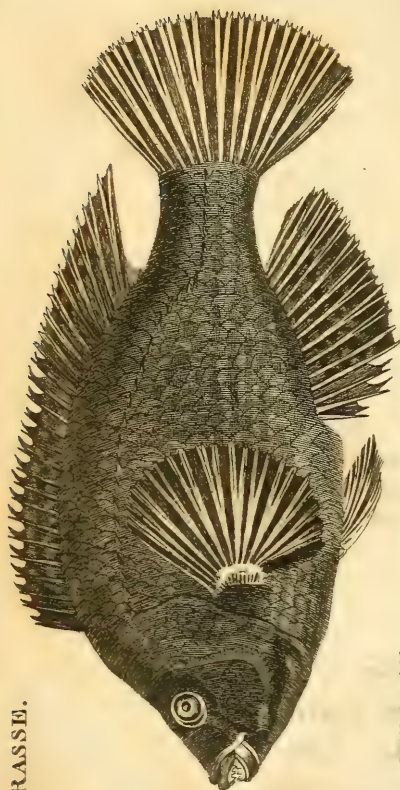
THIS species, which is different from the preceding, was sent from *Scarborough* by Mr. *Travis*. They appear during summer in great shoals off *Filey-Bridge*: the largest weigh about five pounds.

DESCRIP-
TION.

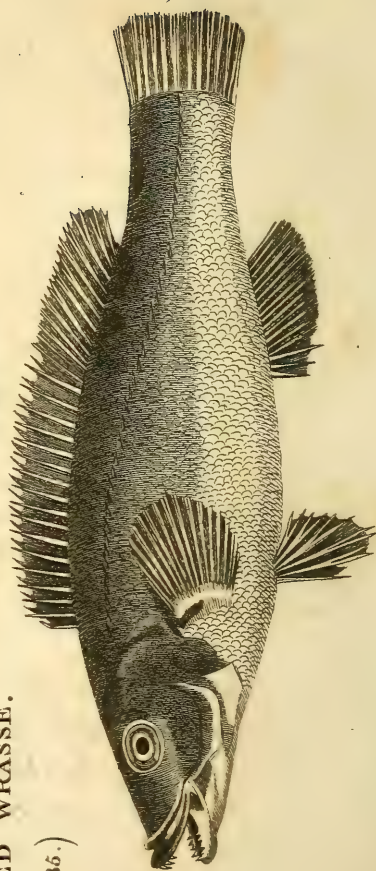
It is of the form of the common wrasse, only between the dorsal fin and the tail is a considerable sinking; above the nose is a deep *sulcus*;

BALLAN WRASSE.





GIBBOUS WRASSE.
(P. 338.)



TRIMACULATED WRASSE.
(P. 335.)

on the farthest cover of the gills is a depression radiated from the center. It has only four branchiostegous rays. The dorsal fin has thirty-one rays, twenty spiny, eleven soft; the last branched, and much longer than the spiny rays; the pectoral fins fourteen; the ventral six; the first of which is short and spiny; the anal twelve; the three first spiny, the nine others branched and soft; the tail rounded at the end; at the bottom, for about a third part of the way, between each ray is a row of scales. The color, in general, is yellow, spotted with orange.

Labrus bimaculatus. L. pinna
dorsali ramentacea, macula
fusca in latere medio, et ad
caudam. *Lin. Syst.* 477.
Gm. Lin. 1289.

Fred. i. 66. *tab.* xxxi. *fig.* 3. BIMACU-
LATED.

Le Labre double tache. *De la*
Cepede Hist. des Poissons,
iii. 502.

Sciæna bimaculata. *Mus. Ad.*

MR. *Brunnich* observed this species at *Penzance*, and referred me to *Linnæus's* description of it in the *Museum Ad. Fred.* where it is described under the name of *Sciæna Bimaculata*.

The body is pretty deep, and of a light color, marked in the middle on each side with a round brown spot; on the upper part of the base of

DESCRIP-
TION.

the tail is another; the lateral line is incurvated. The branchiostegous rays are six in number;* the first fifteen rays of the dorsal fin are spiny; the other eleven soft, and lengthened by a skinny appendage; the pectoral fins consist of fifteen rays; the ventral of six; the first spiny; the second and third ending in a slender bristle; the anal fin is pointed; the four first rays being short and spiny; the rest long and soft.

- | | | |
|------------------|---|--|
| 4. TRIMACULATED. | <i>Labrus trimaculatus. Gm. Lin.</i>
1294.
<i>Labrus carneus maculis tribus</i>
<i>nigris in fine pinnæ dorsi et</i> | <i>extremo dorsi. Ascan. icon.</i>
ii. 13.
<i>Mull. prod. Zool. dan. 46.</i>
<i>Le Paon rouge. Bloch ichth.</i>
ix. 3. tab. 289. |
|------------------|---|--|

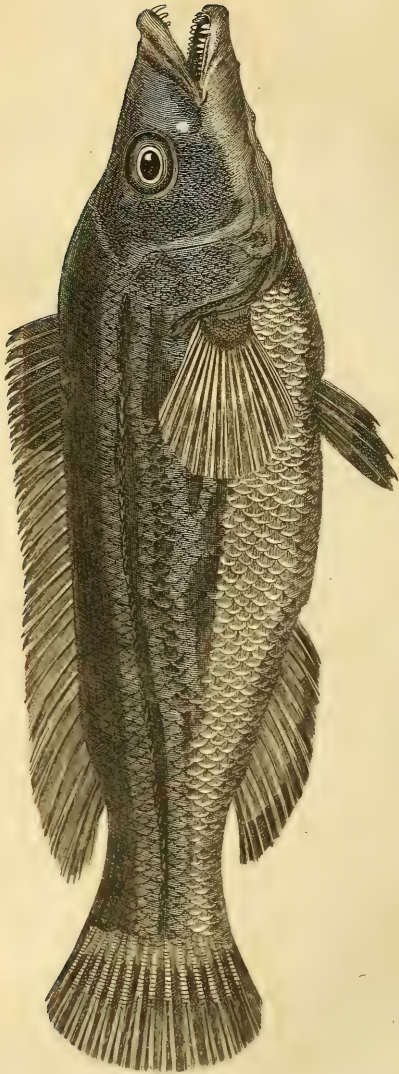
THE species we examined was taken on the coast of *Anglesey*; its length was eight inches.

DESCRIP-
TION.

It was of an oblong form; the nose long; the teeth slender; the fore teeth much longer than the others; the eyes large; the branchiostegous rays, five; the back fin consisted of seventeen spiny rays, and thirteen soft ones; beyond each extended a long nerve; the pectoral fins were round, and consisted of fifteen

* *Linnæus*, in his last edition, has removed this species from the genus of *Sciæna*, to that of *Labrus*, though it does not agree with the latter in his number of branchiostegous rays.

STRIPED WRASSE.



branched rays; the ventral fins consisted of six rays, the first spiny; the anal fin of twelve, the three first short, very strong, and spiny, the others soft and branched; the tail was rounded; the lateral line was strait at the beginning of the back, but grew incurvated towards the tail. The body was covered with large red scales; the covers of the gills with small ones. On each side of the lower part of the back-fin were two large spots, and between the fin and the tail another.

Labrus variegatus. Gm. Lin. 1294.

5. STRIPED,

THIS was taken off the *Skerry Isles*, on the coast of *Anglesey*, its length was ten inches. The form was oblong, but the beginning of the back a little arched; the lips large, double, and much turned up; the teeth like those of the preceding; the branchiostegous rays, five; the number of rays in the back, pectoral, and ventral fins, the same as in those of the former; in the anal fin were fifteen rays, the three first strong and spiny; the tail was almost even at the end, being very little rounded; the covers of the gills cinereous, striped with fine yellow; the sides were marked with four parallel lines

DESCRIP-
TION,

of greenish olive, and the same of most elegant blue; the back and belly red; but the last of a much paler hue, and under the throat almost yellow; along the beginning of the back-fin was a broad bed of rich blue; the middle part white; the rest red; at the base of the pectoral fins was a dark olive spot; the ends of the anal fin, and ventral fins, a fine blue; the upper half of the tail blue; the lower part of its rays yellow.

6. GIBBOUS. *Labrus gibbus. Gm. Lin. Sparus gibbus. Shaw Gen.*
1295. *Zool. iv. part ii. 461.*

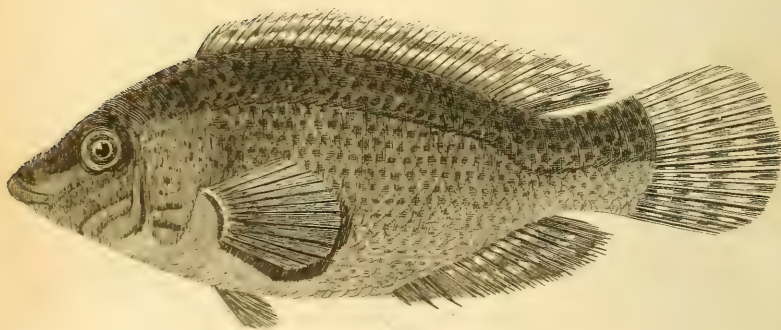
DESCRIP-
TION.

THIS species was taken off *Anglesey*: its length was eight inches; the greatest depth three; it was of a very deep and elevated form, the back being vastly arched, and very sharp or ridged. From the beginning of the head to the nose, was a steep declivity; the teeth like those of the others; the eyes of a middling size; above each a dusky semilunar spot; the nearest cover of the gills finely serrated. The sixteen first rays of the back fin strong and spiny, the other nine soft and branched; the pectoral fins consisted of thirteen; the ventral of six rays; the first ray of the ventral fin was strong

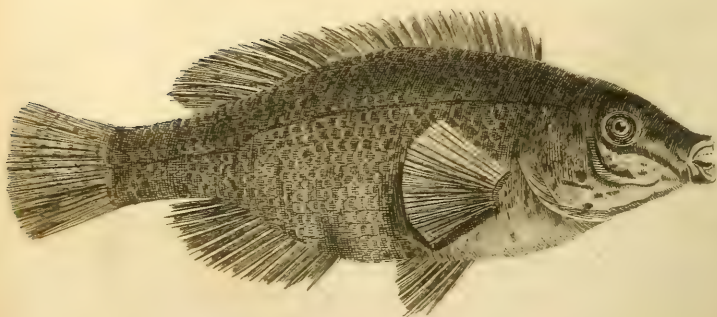
COMBER WRASSE . (P. 342.)



ANTIENT WRASSE ? (P. 333.)



GOLDSINNY WRASSE. (P. 339.)



M Griffiths del

and sharp; the anal fin consisted of fourteen rays, of which the three first were strongly aculeated. The tail was large, rounded at the end, and the rays branched; the ends of the rays extending beyond the webs; the lateral line was incurvated towards the tail; the gill covers and body were covered with large scales; the first were most elegantly spotted, and striped with blue and orange, and the sides spotted in the same manner; but nearest the back the orange was disposed in stripes; the back fin and anal fin were of a sea-green, spotted with black; the ventral fins and tail a fine pea-green; the pectoral fins yellow, marked at their base with transverse stripes of red.

Labrus cornubicus. *Gm. Lin.*
1297.

Jago. Ravi syn. pisc. 163.
fig. 3.

7. GOLD-
SINNY.

Goldsinny *Cornubiensium*, Mr.

THIS and the following species were discovered by Mr. *Jago* on the coast of *Cornwall*: we never had an opportunity of examining them, therefore are obliged to have recourse to his descriptions, retaining their local names.

In the whole form of the body, lips, teeth, and fins, it resembles the common Wrasse: it

DESCRIP-
TION.

is said never to exceed a palm in length ; near the tail is a remarkable black spot ; the first rays of the dorsal fin are tinged with black.

The *Melanurus* of *Rondeletius* (adds he) takes its name from the black spot near the tail ; but in many instances it differs widely from this species, the tail of the first is forked, that of the *Goldsinny* is even at the end.

I suspect that this species was once sent to me from *Cornwall* ; besides the spot near the tail, there was another near the vent.

In the dorsal fin were sixteen spiny, and nine soft rays ; in the pectoral fourteen ; in the anal three spiny, eleven soft ; in the ventral six. The tail almost even at the end.

8. COOK. Cook (*i. e.* Coquus) *Cornubi-* Labrus coquus. *Gm. Lin.*
ensium. Raii Syn. pisc. 163. 1297.
fig. 4.

DESCRIP-
TION.

THIS species, Mr. *Jago* says, is sometimes taken in great plenty on the *Cornish* coasts. It is a scaly fish, and does not grow to any great size. The back is purple and dark blue ; the belly yellow. By the figure it seems of the same shape as the *Comber*, and the tail rounded.

[Among drawings of fishes caught near *Penzance*, the editor has received one of a species of Wrasse, called at *Cornwall* the Cuckoo fish, and which may probably be the Cook Wrasse of *Ray*. The head is large, and slopes rapidly to the nose; the mouth large; the lips fleshy; the teeth few and sharp; the pupil of the eye dark, the irides yellow; the dorsal fin straight, the rays extending rather beyond the web, and are thirty-one in number, twenty-two of which appear soft, and are of a yellow color; the fore part of the fin a bright blue tipped with yellow; the color of the head blue, mottled with olivaceous; the same tints extend to about one-third of the upper part of the back, and below the lateral line to the tail, which is slightly rounded; the remainder of the back deep orange, the belly of a lighter shade; the tail azure; the anal and ventral fins yellow, tipped with blue; the upper part of the pectoral fin blue; the lower yellow. This species is said to grow to the length of one foot. ED.

9. COMBER. *Comber Cornub. Raii syn. Labrus comber. Gm. Lin. pisc. 163. fig. 5?* 1297.

I RECEIVED this species from *Cornwall*, and suppose it to be the *Comber* of Mr. *Jago*.

DESCRIP-
TION.

It was of a slender form. The dorsal fin had twenty spiny, eleven soft rays; the pectoral fourteen; the ventral five; the anal three spiny, seven soft; the tail round; the color of the back, fins, and tail, red; the belly yellow; beneath the lateral line ran parallelly a smooth, even stripe from gill to tail, of a silvery color.

Besides these species, we recollect seeing taken at the *Giant's Causeway* in *Ireland*, a most beautiful kind of a vivid green, spotted with scarlet; and others at *Bandooran*, in the county of *Sligo*, of a pale green.* We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen.

* This may perhaps be the streaked Wrasse figured by Mr. *Donovan*, in his *History of British Fishes*, tab. 74, of which he gives the following specific character: "Fins greenish, dorsal one ramentous; body green, with numerous yellowish longitudinal lines." It is said to be an occasional visitor to the coast of *Cornwall*, in the summer season. Ed.

H 'Ιουλις. <i>Arist. Hist. nat.</i>	dinali fulva utrinque dentata,	10. RAIN- BOW.
<i>lib. ix. c. 2. Ælian. Hist.</i>	<i>Gm. Lin. 1288.</i>	
<i>an. lib. ii. c. 44. Oppian.</i>	<i>Arted. gén. 54.</i>	
<i>lib. i.</i>	<i>Gronov. Zooph. 71. No. 241.</i>	
Julis. <i>Plin. Hist. nat. lib.</i>	<i>Don. Hist. Br. Fishes, tab.</i>	
<i>32. c. 9.</i>	<i>96.</i>	
<i>Belon 254.</i>	<i>La Girelle. Bloch ichth. viii.</i>	
<i>Girello. Girella. Donzella.</i>	<i>114. tab. 287.</i>	
<i>Rondel. 180. Gesner 464.</i>	<i>De la Cepede Hist. des Pois-</i>	
<i>Labrus Julis. L. lateribus cæ-</i>	<i>sons. iii. 497.</i>	
<i>rulescentibus; vitta longitu-</i>		

[A WRASSE, apparently of this species, but varying in color from those taken in the *Mediterranean*, is said to have been caught upon the coast of *Cornwall* in the summer of 1802.

The *Cornish* specimen rather exceeded the length of seven inches; it was of a slender, or elongated form, and remarkable for the elegant distribution of its colors, green, yellow, and purple, changeable in various directions of light; a broad dentated stripe extended from the head nearly to the tail, the color of which was silvery and fulvous; the dorsal fin marked towards the front with a black spot contained nine spiny and thirteen soft rays; the pectoral twelve rays; the ventral, one spiny, and five soft; the anal two spiny and thirteen soft; the tail thirteen rays.

DESCRIP-
TION.

The subject figured by *Bloch*, has the body marked by parallel longitudinal stripes of green, yellow, deep violet, and lighter shades of the same color, fading into a silvery hue. These stripes are very distinct; the principal yellow lateral line is undulated, rather than indented, as it is represented to be in the *Cornish* specimen. ED.

GENUS XXXV. PERCH.

GILL-COVERS edges of serrated.

RAYS branchiostegous seven.

BODY covered with rough scales.

FIN first dorsal spiny ; the second soft.*

Πέγκη. <i>Arist. Hist. an. Lib.</i> vi. c. 14.	da radiis sedecim. <i>Lin. syst.</i> 1: COMMON. 481. <i>Gm. Lin.</i> 1306. <i>Gro-</i> <i>nov. Zooph.</i> No. 301.
<i>Perca Ausonii Mosella</i> , 115.	<i>Abboree. Faun. Suec.</i> No. 332.
Une Perche de riviere. <i>Belon</i> 291.	<i>Perschling, Barschieger. Kram.</i> 384. <i>Wulff. Boruss.</i> No. 27.
<i>Perca fluviatilis. Rondel. flu-</i> <i>viat.</i> 196. <i>Gesner pisc.</i> 698.	La Perche de riviere. <i>Duhamel</i> <i>Tr. des Pesches.</i> iii. 98. <i>sect.</i> 5. <i>tab.</i> 5. <i>fig.</i> 3.
Ein Barss. <i>Schonevelde</i> , 55.	La Perche. <i>Bloch ichth.</i> ii. 62. <i>tab.</i> 52.
A Perch. <i>Wil. Ichth.</i> 291. <i>Raii syn. pisc.</i> 97.	La Perseque Perche. <i>De la</i> <i>Cepede Hist. des Poissons.</i> iv. 395.
<i>Perca lineis utrinque sex trans-</i> <i>versis nigris, pinnis ventra-</i> <i>libus rubris. Arted. synonym.</i> 66.	
<i>Perca fluviatilis. P. pinnis</i> <i>dorsalibus distinctis, secun-</i>	

THE perch of *Aristotle* and *Ausonius* is the same with that of the moderns. That men-

* The Ruffe and Black Perch are exceptions, having only one dorsal fin, but the first rays of it are spiny.

tioned by *Oppian*, *Pliny*, and *Athenæus*,* is a sea-fish probably of the *Labrus* or *Sparus* kind, being enumerated by them among some congenerous species. Our perch was much esteemed by the *Romans*:

*Nec te delicias mensarum Perca, silebo
Amnigenos inter pisces dignande marinis.* **AUSONIUS.**

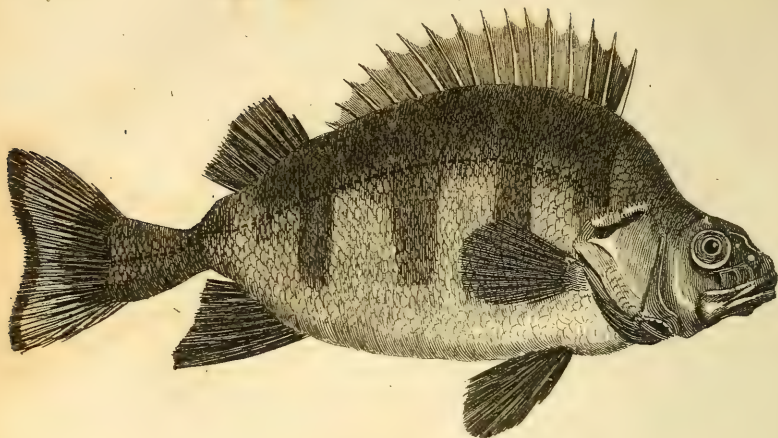
It is not less admired at present as a firm and delicate fish; and the *Dutch* are particularly fond of it when made into a dish called *Water Souchy*.

It is gregarious, and loves deep holes and gentle streams: is a most voracious fish, and bites eagerly: if the angler meets with a shoal of perch, he is sure of taking every one. It is a common notion that the pike will not attack this fish, being fearful of the spiny fins which the perch erects on the approach of the former. This may be true in respect to large fish; but it is well known the small ones are the most tempting bait that can be laid for the pike.

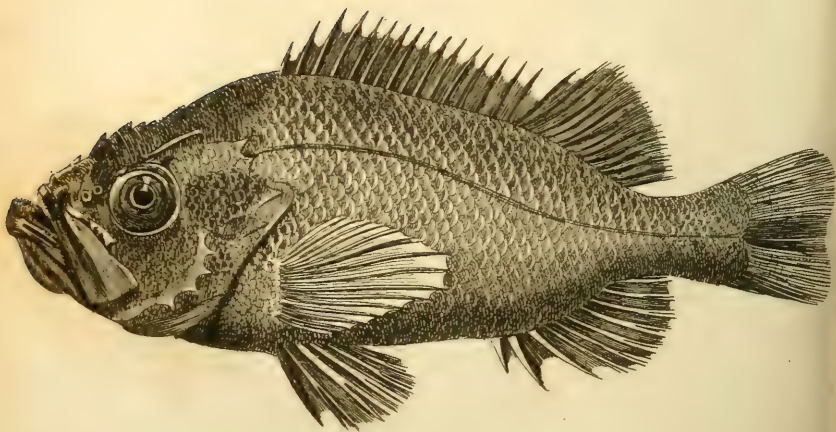
The perch is very tenacious of life: we have known them carried near sixty miles in dry straw, and yet survive the journey. They sel-

* *Oppian Halieut.* i. 124. *Plinii Lib.* ix. c. 16. *Athenæus Lib.* vii. p. 319.

COMMON PERCH. VAR



SEA PERCH. (P. 349)



M. Griffiths del

dom grow to a large size: we once heard of one that was taken in the *Serpentine* river, *Hyde-Park*, that weighed nine pounds, but that is very uncommon.

The body is deep; the scales very rough; the back much arched; the side-line near the back; the irides golden; the teeth small, disposed in the jaws and on the roof of the mouth; the edges of the covers of the gills serrated; on the lower end of the largest is a sharp spine. The first dorsal fin consists of fourteen strong spiny rays; the second of sixteen soft ones; the pectoral fins are transparent, and consist of fourteen rays; the ventral of six; the anal of eleven; the tail is a little forked. The colors are beautiful; the back and part of the sides being of a deep green, marked with five broad black bars pointing downwards; the belly is white, tinged with red; the ventral fins are of a rich scarlet; the anal fins and tail of the same color, but rather paler.

DESCRIP-
TION.

In a lake called *Llyn Rathlyn*, in *Meireonethshire*, is a very singular variety of perch: the back is quite hunched, and the lower part of the back bone, next the tail, strangely distorted: in color, and in other respects, it resembles the common kind, which is as numerous in the lake as these deformed fish. They are

CROOKED
PERCH.

not peculiar to this water, for *Linnæus* takes notice of a similar variety found at *Fahlun*, in his own country. I have also heard that they are met with in the *Thames* near *Marlow*.

2. BASSE. *Adεραξ*? *Arist. Hist. an. lib.* cundæ tredecim, ani quatuordecim. *Arted. synon.* 69.
iv. c. 10. &c.
Lupus? *Ovid. Halieut.* 112. *Perca Labrax. Lin. syst.* 482.
Le Bar, le Loup. *Belon* 113. *Gronov. Zooph.* No. 300.
Lupus. *Rondel.* 268. *Gesner* Le Loup. *Bloch ichth.* ix. 45.
pisc. 506. *tab.* 301.
A Basse. *Wil. Ichth.* 271. La Centropome Loup. *De la*
Raii syn. pisc. 83. *Cepede Hist. des Poissons.*
Perca radiis pinnæ dorsalis se- iv. 267.

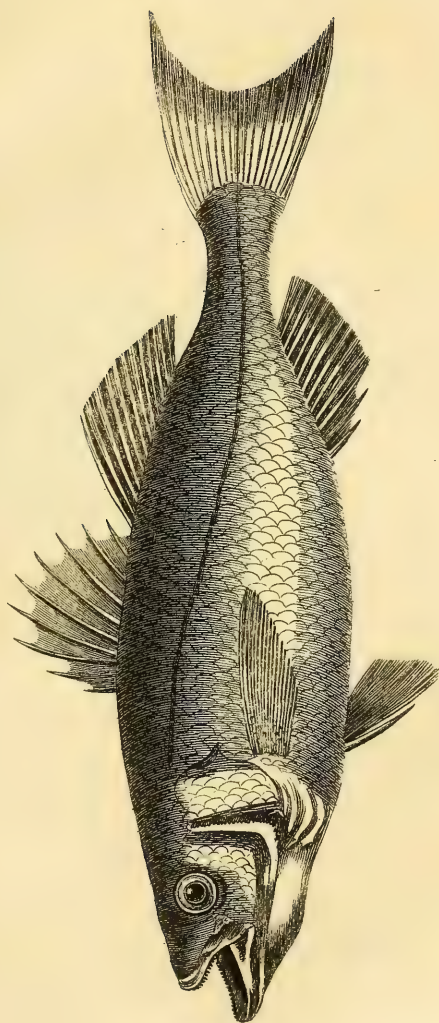
THE* basse is a strong, active, and voracious fish: *Ovid* calls them *rapidi lupi*, a name continued to them by after-writers.

DESCRIP-
TION.

That which we had an opportunity of examining was small; but they are said to grow to the weight of fifteen pounds, and, according to *Duhamel*, even thirty pounds. The irides are silvery; the mouth large; the teeth are situated in the jaws, and are very small; in the roof of the mouth is a triangular rough space, and just

* *Bloch*, and *Dr. Shaw* in his *General Zoology*, have classed the Basse in the genus *Sciæna*. *Gmelin* appears to have omitted it in his edition of *Linnæus*. ED.

BASSE PERCH.



at the gullet are two others of a roundish form ; the scales are of a middling size, very thick set, and adhere closely. The first dorsal fin has nine strong spiny rays, of which the first is the shortest, the middlemost the highest ; the second dorsal fin consists of thirteen rays, the first spiny, the others soft ; the pectoral fins have fifteen soft rays ; the ventral six rays, the first spiny ; the anal fourteen rays, the three first spiny, the others soft ; the tail is a little forked. The body is formed somewhat like that of a salmon. The color of the back is dusky, tinged with blue. The belly white. In young fish the space above the side-line is marked with small black spots.

It is esteemed a very delicate fish.

Une Perche de mer. <i>Belon</i>	<i>Perca marina.</i> <i>P. pinnis dor-</i>	3. SEA.
163.	<i>salibus unitis xv spinosis,</i>	
<i>Perca marina.</i> <i>Salvian, 225.</i>	<i>xiv muticis, corpore lituris</i>	
<i>Rondel. 182.</i>	<i>variegato. Lin. Syst. 483.</i>	
<i>Wil. Ichth. 327.</i>	<i>Gm. Lin. 1313.</i>	
<i>Raii Syn. pisc. 140.</i>	<i>Faun. Suec. 233.</i>	

THIS species is about a foot long ; the head large and deformed ; eyes great ; teeth small and numerous. On the head and covers of the

DESCRIP-
TION.

gills are strong spines. The dorsal fin is furnished with fifteen strong spiny rays, and fourteen soft; the pectoral with eighteen; the ventral with one spiny, and five soft; the anal with three spiny, and eight soft; the tail, even at the end; the lateral line parallel to the back. The color red, with a black spot on the covers of the gills, and some transverse dusky lines on the sides.

It is a fish held in some esteem at the table.

- | | |
|---|--|
| 4. RUFFE. <i>Cernua. Belon</i> 186. | 15, cauda bifida. <i>Lin. syst.</i> |
| <i>Percæ fluviatilis</i> genus minus. | 487. <i>Gm. Lin.</i> 1320. <i>Gronov. Zooph.</i> No. |
| <i>Gesner pisc.</i> 701. | |
| <i>Aspredo. Caii opusc.</i> 107. | <i>Giers, Snorgers. Faun. Suec.</i> |
| <i>Ein stuer, stuerbarss. Schonevelde,</i> 56. | No. 119. |
| <i>Cernua fluviatilis. Wil. Ichth.</i> 334. | <i>Schroll, Pfaffenlaus. Schaeff. pisc.</i> 37. <i>tab. ii. Wulff Bo-russ.</i> No. 35. |
| <i>Ruffe. Raii syn. pisc.</i> 143. | <i>La Petite Perche. Bloch Ichth.</i> ii. 68. <i>tab. 53. f. 2.</i> |
| <i>Perca dorso monopterygio, capite cavernoso. Arted. syn.</i> 68. | <i>L'Holocentre Post. De la Cepede Hist. des Poissons.</i> iv. 362. |
| <i>Perca cernua. P. pinnis dorsalibus unitis radiis</i> 27, <i>spinis</i> | |

THIS fish is found in several of the *English* streams: it is gregarious, assembling in large shoals, and keeping in the deepest part of the water.

It is of a much more slender form than the perch, and seldom exceeds six inches in length; the teeth are very small, and disposed in rows. It has only one dorsal fin extending along the greatest part of the back; the first rays, like those of the common perch, are strong, sharp, and spiny; the others soft; the pectoral fins consist of fifteen rays; the ventral of six; the anal of eight; the two first strong and spiny; the tail a little bifurcated. The body is covered with rough compact scales; the back and sides are of a dirty green, the last inclining to yellow, but both spotted with black; the dorsal fin is spotted with black; the tail marked with transverse bars.

<i>Perca nigra.</i> <i>Gm. Lin.</i> 1321.	<i>Holocentrus niger.</i> <i>Shaw Gen.</i> 5. BLACK.
The Black Fish. <i>Mr. Jago.</i>	<i>Zool.</i> iv. part ii. 558.
<i>Borlase Cornwall,</i> 271. tab.	<i>De la Ceppe Hist. des Pois-</i>
xxv. <i>fig.</i> 8.	<i>sons.</i> iv. 366.

MR. *Jago* has left so brief a description of this fish, that we find difficulty in giving it a proper class: it agrees with the Ruffe in the form of the body, and the smallness of the teeth, in having a single extensive fin on the back, a forked tail, and being of that section of bony fish, termed *Thoracic*: these appear by the

figure, the teeth excepted. The other characters must be borrowed from the description.

DESCRIP-
TION.

“ It is smooth, with very small thin scales,
“ fifteen inches long, three quarters of an inch
“ broad; head and nose like a peal or trout;
“ little mouth; very small teeth, beginning from
“ the nose four inches and three quarters, near
“ six inches long; a forked tail; a large double
“ nostril. Two taken at *Loo*, *May* 26, 1721,
“ in the *Sean*, near the shore, in sandy ground
“ with small ore weed.”*

* *De la Ceppe* has divided this genus into three, distinguish-
ing the *Perseque* or Perch, from the *Centropome*, by its having
one or more spines on the gill-covers, and the *Holocentre* from
the others by its possessing only one dorsal fin. Ep.

FIFTEEN SPINED STICKLEBACK. (P. 356.)



TEN SPINED S. BACK. (P. 355.)



THREE SPINED S. BACK. (P. 353.)



GENUS XXXVI. STICKLEBACK.

RAYS branchiostegous three or six.

BELLY covered with bony plates.

FIN one dorsal, with several sharp spines between it and the head.

- | | | |
|--|--|---------------------|
| La Grande Espinoche, un
Epinaud, une Artiere. <i>Be-
lon</i> 328. | <i>syst.</i> 489. <i>Gm. Lin.</i> 1323.
<i>Gronov. Zoöph.</i> No. 406. | 1. THREE
SPINED. |
| Pisciculi aculeati prius genus.
<i>Rondel. fluviat.</i> 206. <i>Gesner
pisc.</i> 8. | Spigg, Horn-fisk. <i>Faun. Suec.</i>
No. 336. | |
| Stickleback, Banstickle, or
Sharpling. <i>Wil. Ichth.</i> 341.
<i>Raii syn. pisc.</i> 145. | Stichling, Stachel-fisch. <i>Wulff
Boruss.</i> No. 37. | |
| Gasterosteus aculeis in dorso
tribus. <i>Arted. synonym.</i> 80. | L'Echarde. <i>Duhamel Tr. des
Pesches.</i> ii. 516. <i>sect.</i> 3.
<i>tab.</i> 26. <i>fig.</i> 6. | |
| Gasterosteus aculeatus. <i>Lin.</i> | L'Epinoche. <i>Bloch ichth.</i> ii.
73. <i>tab.</i> 53. <i>f.</i> 3.
<i>De la Cope Hist. des Pois-
sons.</i> iii. 296. | |

THESE are common in many of our rivers, but no where in greater quantities than in the fens of *Lincolnshire*, and some of the rivers that creep out of them. At *Spalding* there are, once in seven or eight years, amazing shoals that appear in the *Welland*, and come up the river in form of a vast column. They are supposed to

be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is so great, that they are used to manure the land, and trials have been made to get oil from them. A notion may be had of this vast shoal, by saying that a man employed by the farmer to take them, has got for a considerable time four shillings a day by selling them at a halfpenny per bushel.

DESCRIP-
TION.

This species seldom reaches the length of two inches; the eyes are large; the belly prominent; the body near the tail square; the sides are covered with large bony plates, placed transversely. On the back are three sharp spines, that can be raised or depressed at pleasure; the dorsal fin is placed near the tail; the pectoral fins are broad; the ventral fins consist each of one spine, or rather plate, of unequal lengths, one being large, the other small; between both is a flat bony plate, reaching almost to the vent; beneath the vent is a short spine, and then succeeds the anal fin; the tail consists of twelve rays, and is even at the end. The color of the back and sides is an olive green; the belly white; but in some the lower jaws and belly are of a bright crimson.

La petite Espinoche. <i>Belon</i>	<i>Gasterosteus pungitius.</i> <i>Lin.</i>	2. TEN SPINED.
328.	<i>syst.</i> 491. <i>Gm.</i> <i>Lin.</i> 1326.	
Pisciculi aculeati alterum ge-	<i>Gronov.</i> <i>Zooph.</i> No. 405.	
nus. <i>Rondel. fluviat.</i> 206.	<i>Benunge, Gaddsur, Gorquad.</i>	
<i>Gesner pisc.</i> 8.	<i>Faun. Suec.</i> No. 337.	
Lesser Stickleback. <i>Wil. Ichth.</i>	<i>La petite Epinoche de Mer.</i>	
342. <i>Raii syn. pisc.</i> 145.	<i>Bloch ichth.</i> ii. 76. <i>tab.</i> 53.	
<i>Gasterosteus aculeis</i> in dorso	<i>f.</i> 4.	
decem. <i>Arted. synon.</i> 80.		

THIS species is much smaller than the former, and of a more slender make. The back is armed with ten short sharp spines, which do not incline the same way, but cross each other; the sides are smooth, not plated like those of the preceding; in other particulars it resembles the former. The color of the back is olive; the belly silvery.*

DESCRIP-
TION.

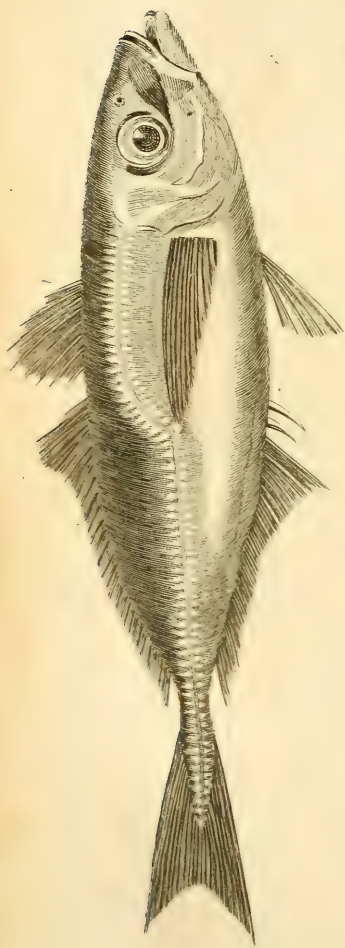
* The editor has been assured by an intelligent observer, that this is merely the young of the preceding species, and that the spines diminish in number as the fish grows older. Ed.

3. FIFTEEN SPINED. *Aculeatus*, sive *Pungitius marinus longus*, Stein-bicker, Ersskruper. *Schonevelde*, 10. *tab. iv. Sib. Scot. iii. 24. tab. 19.*
- Aculeatus marinus major.* *Wil. Ichth. 340. App. 23. Raii syn. pisc. 145.*
- Gasterosteus aculeis* in dorso quindecim. *Arted. synonym. 81.*
- Gasterosteus Spinachia.* *Lin. Syst. 492. Gm. Lin. 1327. Gronov. Zooph. No. 407. Faun. Suec. No. 338.*
- La grande Epinoche. *Bloch ichth. ii. 78. tab. 53. f. 1.*

THIS species inhabits the sea, and is never found in fresh water.

DESCRIP-
TION.

Its length is above six inches; the nose is long and slender; the mouth tubular; the teeth small. The fore part of the body is covered on each side with a row of bony plates, forming a ridge; the body afterwards grows very slender, and is quadrangular. Between the head and the dorsal fin are fifteen small spines; the dorsal fin is placed opposite the anal fin; the ventral fins are wanting; the tail is even at the end. The color of the upper part is a deep brown; the belly white.



SCAD MACKREL (P. 365.)



COMMON MACKREL (P. 367)

GENUS XXXVII. MACKREL.

RAYS branchiostegous seven.

FINS several small between the dorsal fin and the tail.

- Σκόμζρος. *Arist. Hist. an.*
lib. vi. c. 17. ix. c. 2. Athe-
næus, lib. iii. 121. vii. 321.
Oppian Halieut. i. 142.
Scomber. Ovid Halieut. 94.
Plinii lib. ix. c. 15. xxxi.
c. 8.
Macarello, Scombro. Salvian.
*241.**
Le Macreau. Belon 197.
Scomber. Rondel. 233. Ges-
ner pisc. 841. (pro 861.)
Makerel. Schonevelde, 66.
Mackrell, or Macarel. Wil.
Ichth. 181. Raii Syn. pisc.
58.
Scomber pinnulis quinque in
- extremo dorso, polyptery-*
gio, aculeo brevi ad anum.
Arted. Synon. 48.
Scomber Scomber. Lin. Syst.
492. Gm. Lin. 1328. Gro-
nov. Zooph. No. 304.
Mackrill. Faun. Suec. No.
339.
Le Maquereau. Duhamel Tr.
des Pesches. iii. 169. sect. 7.
tab. 1. fig. 1.
Le Maquereau. Bloch ichth.
ii. 82. tab. 54.
Le Sombre Maquereau. De
la Cepede Hist. des Pois-
sons. iii. 24.
1. COMMON.

THE mackrel is a summer fish of passage that visits our shores in vast shoals. It is less use-

* This is the first opportunity we have had of looking into *Salvianus*, whose *Italian* synonyms we make use of.

ful than other species of gregarious fish, being very tender, and unfit for carriage; not but that it may be preserved by pickling and salting, a method, we believe, practised only in *Cornwall*,* where it proves a great relief to the poor during winter.

GARUM. It was greatly esteemed by the *Romans*, because it furnished the pretious *Garum*, a sort of pickle that gave a high relish to their sauces, and was besides used medicinally. It was drawn from different kinds of fishes, but that made from the mackrel had the preference: the best was made at *Carthagera*, vast quantities of mackrel being taken near an adjacent isle, called from that circumstance, *Scombraria*;† and the *Garum*, prepared by a certain company in that city, bore a high price, and was distinguished by the title of *Garum Sociorum*.‡

SIZE. This fish is easily taken by a bait, but the best time is during a fresh gale of wind, which is thence called a *mackrel* gale. In the spring the eyes of mackrel are almost covered with a white film; during which period they are half blind. This film grows in winter, and is cast the beginning of summer. It is not often that it exceeds two pounds in weight, yet we heard

* *Borlase Cornwall*, 269.

† *Strabo Lib. iii.* 109.

‡ *Plinii Lib. xxxi. c. 8.*

that there has been one sold in *London* that weighed five and a quarter.

The nose is taper and sharp-pointed; the eyes large; the jaws of an equal length; the teeth small, but numerous; the form very elegant; the body is a little compressed on the sides; towards the tail it grows very slender, and rather angular. The first dorsal fin is placed a little behind the pectoral fins; it is triangular, and consists of nine or ten stiff rays; the second lies at a distance from the other, and has twelve soft rays; the pectoral twenty; the ventral six; at the base of the anal fin is a strong spine; between the last dorsal fin and the tail, are five small fins, and the same number between the anal fin and the tail. The tail is broad and semilunar. The color of the back and sides above the lateral line, is a fine green, varied with blue, marked with black lines, pointing downwards; beneath the line the sides and belly are of a silvery color. It is a most beautiful fish when alive; for nothing can equal its brilliancy, which death impairs, but does not wholly obliterate.

DESCRIP-
TION.

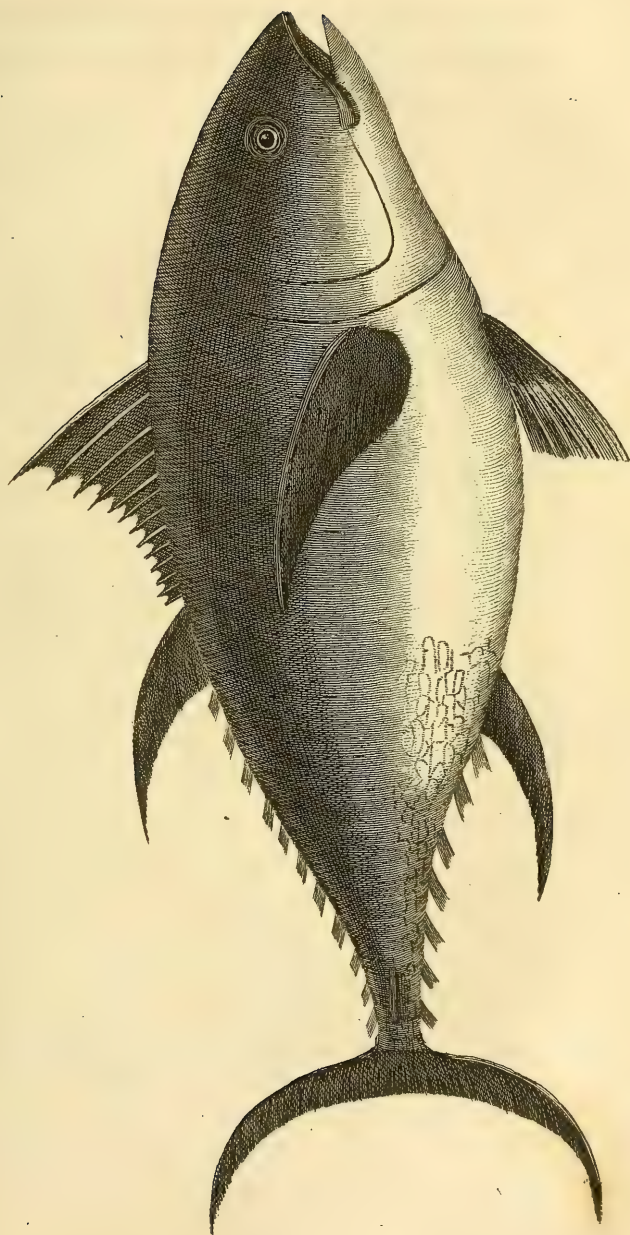
2. TUNNY. Θύννος. *Arist. Hist. an. Lib.*
 ii. c. 13. &c. *Athenæus,*
Lib. vii. 301. Oppian Halieut. iii. 620.
Thunnus. Ovid Halieut. 95. Plinii Lib. ix. c. 15.
Tonno. Salvian. 123.
Le Thon. Belon 99.
Thunnus. Rondel. 241. Gesner pisc. 957.
Thunnus vel orcynus. Schonevelde, 75.
Tunny fish, or Spanish Mackrell. Wil. Ichth. 176. Raii Syn. pisc. 57. Sibbald Scot.
Scomber pinnulis octo vel novem in extremo dorso, ex sulco ad pinna ventrales. Arted. Synon. 49.
Scomber Thunnus. Sc. pinnulis utrinque octo: Lin. Syst. 493. Gm. Lin. 1330. Gronov. Zooph. No. 305.
Duhamel Tr. des Pesches, iii. sect. 7. 190. tab. 5.
Le Thon. Bloch ichth. ii. 87. tab. 55.
De la Cepede Hist. des Poissons, ii. 605.

THE tunny was a fish well known to the ancients; it made a considerable branch of commerce; the time of its arrival into the *Mediterranean* from the ocean was observed, and stations for taking it established in places it most frequented; the eminences above the fishery were styled Θυννοσκοπεῖα,* and the watchmen that gave notice to those below of the motions of the fish, Θυννοσκόποι.† From one of the former the

* *Strabo Lib. v. 156.*

† *Oppian Halieut. iii. 638.* This person answers to what the *Cornish* call a *Huer*, who watches the arrival of the pilchards.

TUNNY MACKREL.



lover in *Theocritus* threatened to take a desperate leap, on account of his mistress's cruelty.

οὐκ επακουεις?

Τάν ξαίταν ἀποδὺς εἷς κυματα τήνα ἀλευμαι
Ωπερ τοὺς ΘΥΝΝΟΥΣ σκοπιᾶζεται *Ολπις ο γριπεύς.

Do you not hear? then, rue your Goat-herd's fate,
For, from the rock where *Olpis* doth descry
The numerous *Thunny*, I will plunge and die.

The very same station, in all probability, is at this time made use of, as there are very considerable tunny fisheries on the coast of *Sicily*, as well as several other parts of the *Mediterranean*,* where they are cured, and make a great article of provision in the adjacent kingdoms. They are caught in nets, and amazing quantities are taken, for they come in vast shoals, keeping along the shores.

They frequent our coasts, but not in shoals like the Tunnies of the *Mediterranean*. They are not uncommon in the *Lochs* on the western coast of *Scotland*, where they come in pursuit of herrings; and, often during night, strike into the nets, and do considerable damage. When the fishermen draw them up in the morning, the Tunny rises at the same time towards the surface, ready to catch the fish that drop out.

* Many of them are the same that were used by the antients, as we learn from *Oppian* and others.

On perceiving it, a strong hook baited with a herring, and fastened to a rope, is instantly flung out, which the Tunny seldom fails to take. As soon as hooked, it loses all spirit, and after a very little resistance, submits to its fate. It is dragged to the shore and cut up, either to be sold fresh to people who carry it to the country markets, or is preserved salted in large casks.

The pieces, when fresh, look exactly like raw beef; but when boiled turn pale, and have something of the flavor of salmon.

DESCRIP-
TION.

One, which was taken when I was at *Inveraray* in 1769, weighed 460 pounds. It was seven feet ten inches long; the greatest circumference five feet seven; the lest near the tail one foot six inches. The body was round and thick, and grew suddenly very slender towards the tail, and near that part was angular; the irides were of a pale green; the teeth very minute; the first dorsal fin consisted of thirteen strong spines, which, when depressed, were so concealed in a deep *sulcus* in the back, as to be quite invisible till very closely inspected; immediately behind this fin was another, high and falciform; almost opposite to it, was the anal fin, of the same form; the spurious fins were of a rich yellow color; of these there were eleven above, and ten be-

low; the tail was in form of a crescent; and measured two feet seven inches between tip and tip. The skin on the back was smooth, very thick, and black; on the belly the scales were visible; the color of the sides and belly silvery, tinged with cærulean and pale purple, near the tail marbled with grey.

They are known on the coast of *Scotland* by the name of *Mackrelsture*: *Mackrel*, from being of that genus; and *sture*, from the *Danish*, *stor*, great.

Sauro. *Salvian*. 79.

Un Sou, Macreau bastard.

Belon 186.

Trachurus. *Rondel*. 233.

Lacertus *Bellonii*. *Gesner pisc*.

467.

Museken, Stocker. *Schone-
velde*, 75.

Scad, Horse-mackrell. *Wil*.

Ichth. 290. *Raii syn. pisc*.

92.

Scomber linea laterali aculea-

ta, pinna ani ossiculorum

30. *Arted. synon*. 50.

Scomber Trachurus. Sc. pin-

nis unitis, spina dorsali re-

cumbente, linea laterali lo-

ricata. *Lin. syst*, 494. *Gm*.

Lin. 1335. *Gronov. Zooph*.

No. 308.

Le Maquereau batard. *Bloch*

ichth. ii. 97. *tub*. 56.

Le Caranx Trachure. *De la*

Cepede Hist. des Poissons.

iii. 60.

3. SCAD.

THAT which we examined was sixteen inches long; the nose sharp; the eyes very large; the irides silvery; the lower jaw a little longer than the upper; the edges of the jaws were rough,

DESCRIP-
TION.

but without teeth. On the upper part of the covers of the gills was a large black spot; the scales were large and very thin; the lower half of the body quadrangular, and marked on each side with a row of thick strong scales, prominent in the middle, extending to the tail. The first dorsal fin consisted of eight strong spines; the second lay just behind it, and consisted of thirty-four soft rays, and reached almost to the tail; the pectoral fins were narrow and long, and composed of twenty rays; the ventral of six branched rays; the vent was in the middle of the belly; the anal fin extended from it to the tail, which was greatly forked. The head and upper part of the body varied with green and blue; the belly silvery. This fish was taken in the month of *October*; was very firm and well tasted, having the flavor of mackrel.

GENUS XXXVIII. SURMULLET.

HEAD compressed, steep, and covered with scales.

RAYS branchiostegous three.

BODY covered with large scales, easily dropping off.

- | | | |
|---|---|---------|
| <i>Τρίγλη?</i> <i>Arist. Hist. an. Lib.</i> | <i>Mullus Bellonii.</i> <i>Wil. Ichth.</i> | 1. RED. |
| ii. <i>Oppian Halieut.</i> i. 590. | 285. <i>Ruii Syn. pisc.</i> 90. | |
| <i>Τρίγλη Σόφρων.</i> <i>Athenæus,</i> | <i>Trigla capite glabro, cirris ge-</i> | |
| <i>Lib.</i> vii. 325. | <i>minis in maxilla inferiore.</i> | |
| <i>Mullus.</i> <i>Ovid Halieut.</i> 123. | <i>Arted. synonym.</i> 71. | |
| <i>Plinii Lib.</i> ix. c. 17. | <i>Mullus cirris geminis corpore</i> | |
| <i>Triglia.</i> <i>Salvian.</i> 235. | <i>rubro.</i> <i>Lin. Syst.</i> 495. <i>Gm.</i> | |
| <i>Le Rouget barbé, Surmurlet.</i> | <i>Lin.</i> 1338. <i>Gronov. Zooph.</i> | |
| <i>Belon</i> 170. | <i>No.</i> 286. | |
| <i>Mullus barbatus.</i> <i>Rondel.</i> 290. | <i>Le Rouget.</i> <i>Bloch ichth.</i> x. 81. | |
| <i>Gesner pisc.</i> 565. | <i>tab.</i> 348. <i>f.</i> 2. | |
| <i>Petermanneken, Goldeken.</i> | <i>Le Mulle rouget.</i> <i>De la Ce-</i> | |
| <i>Schonevelde,</i> 47. | <i>pède Hist. des Poissons,</i> iii. | |
| | 385. | |

THIS fish was highly esteemed by the *Romans*, and bore an exceedingly high price. The capricious epicures of *Horace's** days, valued it in proportion to its size; not that the larger

* *Sat. lib. ii. s. ii. 33.*

were more delicious, but that they were more difficult to be got. The price that was given for one in the time of *Juvenal*, and *Pliny*, is a striking evidence of the luxury and extravagance of the age :

Mullum sex millibus emit
Æquantem sane paribus sestertia libris.*

The lavish slave
Six thousand pieces for a Mullet gave,
A sesterce for each pound.

[DRYDEN.]

But *Asinius Celer*,† a man of consular dignity, gave a still more unconscionable sum, for he did not scruple bestowing eight thousand *nummi*, or sixty-four pounds eleven shillings and eight-pence, for a fish of so small a size as the mullet; for according to *Horace*, a *Mullus trilibris*, or one of three pounds, was a great rarity; so that *Juvenal's* spark must have had a great bargain in comparison of what *Celer* had.

But *Seneca* says that it was not worth a farthing, except it died in the very hand of your guest; that such was the luxury of the times, that there were stews even in the eating rooms, so that the fish could at once be brought from under the table, and placed on it; that

* *Juvenal Sat.* iv. 48l. 8s. 9d. † *Plin. Lib.* ix. c. 17.

they put the mullets in transparent vases, that they might be entertained with the various changes of its rich color while it lay expiring.*

Apicius,† a wonderful genius for luxurious inventions, first hit upon the method of suffocating them in the exquisite *Carthaginian*‡ pickle, and afterwards procured a rich sauce from their livers. This is the same gentleman whom *Pliny*, in another place, honors with the title of *Nepotum omnium altissimus gurgis*,§ an expression too forcible to be rendered in our language.

We have heard of this species being taken on the coast of *Scotland*, but had no opportunity of examining it; and whether it is found in the west of *England* with the other species, or variety, we are not at this time informed. *Salvianus* makes it a distinct species, and says, that it is of a purple color, striped with golden lines, and that it did not commonly exceed a palm in length: no wonder then that such a prodigy as one of six pounds should so captivate the fancy of the *Roman* epicure. Mr. *Ray* establishes some

* *In cubili natant pisces: et sub ipsa mensa capitur, qui statim transferatur in mensam: parum videtur recens nullus nisi qui in convivæ manu moritur. Vitreis ollis inclusi offeruntur, et observatur morientium color, quem in multas mutationes mors luctante spiritu vertit.* Seneca Nat. Quæst. Lib. iii. c. 17.

† *Ad omne luxus ingenium mirus.*

‡ *Garum Sociorum*, vide p. 358. § *Lib. x. c. 48.*

other distinctions, such as the first dorsal fin having nine rays, and the color of that fin, the tail, and the pectoral fins, being of a very pale purple.

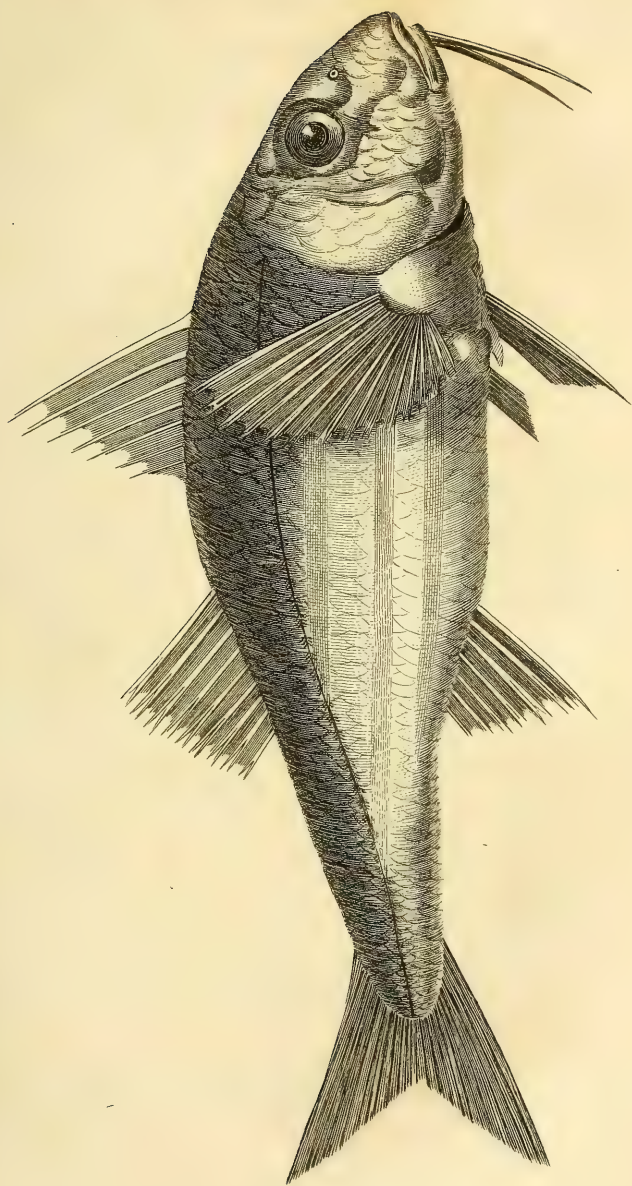
On these authorities we form different species of these fishes, having only examined what *Salvianus* and Mr. *Ray* call the *Mullus major*, which we describe under the title of

- | | |
|---|---|
| <p>2. STRIPED. <i>Mullus major. Salvian. 236.</i>
 <i>Mullus major noster et Salviani. 95. Cornubiensibus.</i>
 <i>A Surmullet. Wil. Ichth. 285.</i>
 <i>Raii syn. pisc. 91.</i>
 <i>Trigla capite glabro, lineis utrinque quatuor luteis, longitudinalibus, parallelis. Arted. synonym. 72.</i>
 <i>Mullus cirris geminis lineis</i></p> | <p><i>luteis longitudinalibus. Lin. syst. 496. Gm. Lin. 1339.</i>
 <i>Le Surmulet. Duhamel Tr. des Pesches. iii. 148. sect. 6. tab. 3. fig. 1.</i>
 <i>Le Surmulet. Bloch ichth. ii. 103. tab. 57.</i>
 <i>Le Mulle surmulet. De la Ceppe Hist. des Poissons. iii. 394.</i></p> |
|---|---|

THIS species was communicated to us by Mr. *Pitfield* of *Exeter*: its weight was two pounds and an half; its length was fourteen inches; the thickest circumference eleven. It appears on the coast of *Devonshire* in *May*, and retires about *November*.

DESCRIP-
TION.

The head is steep; the nose blunt; the body thick; the mouth small; the lower jaw furnished with very small teeth; in the roof of the mouth is a rough hard space; at the entrance



STRIPED SURMULLET.

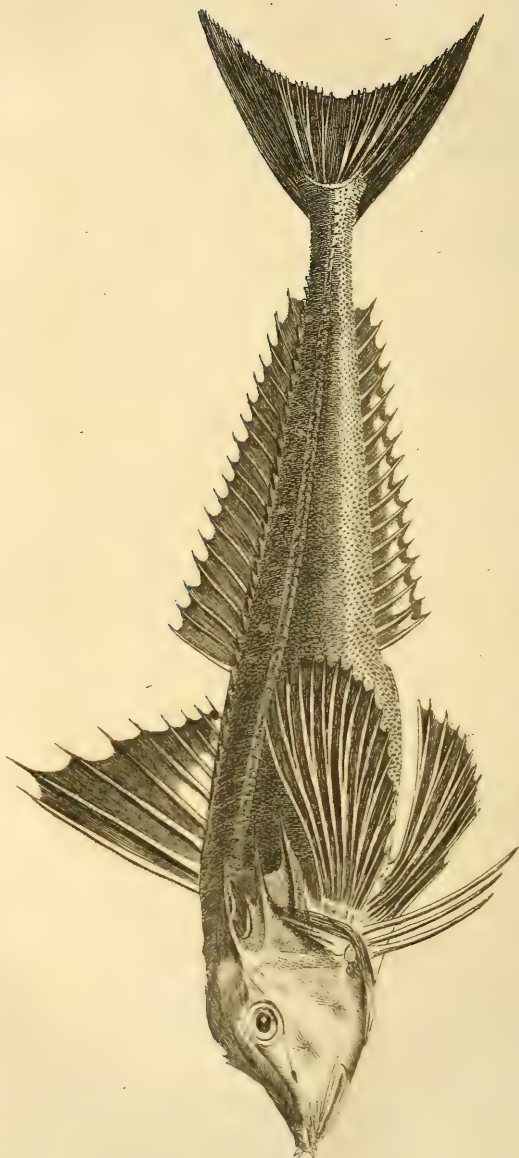


of the gullet above is a single bone, and beneath are a pair, each with echinated surfaces, that help to comminute the food before it passes down; from the chin hung two beards, two inches and a half long. The eyes are large; the irides purple; the head and covers of the gills very scaly. The first dorsal fin is lodged in a deep furrow, and consists of six strong, but flexible rays; the second of eight; the pectoral fins of sixteen; the ventral of six branched rays; the anal of seven; the tail is much forked. The body is very thick, and covered with large scales; beneath them the color is of a most beautiful rosy red;* the changes of which, under the thin scales, gave that entertainment to the *Roman* epicures as above mentioned; the scales on the back and sides are of a dirty orange; those on the nose a bright yellow; the tail a reddish yellow. The sides are marked lengthways with two lines of a light yellow color; these, with the red color of the dorsal fins, and the number of their rays, *Mr. *Ray* makes the character of the *Cornish* Surmullet: these are notes so liable to vary by accident, that till we receive further information from the

* This color is most vivid during summer.

inhabitants of our western coasts, where these fishes are found, we shall remain doubtful whether we have done right in separating this from the former, especially as Doctor *Gronovius* has pronounced them to be only varieties.

GREY GURNARD.



GENUS XXXIX. GURNARD.

Nose sloping.

HEAD covered with strong bony plates.

RAYs branchiostegous seven.

APPENDAGES three slender at the base of the pectoral fins.

Gurnatus seu Gurnardus griseus, the Grey Gurnard.	ternis dorso maculis nigris rubrisque. <i>Lin. Syst.</i> 497.	1. GREY.
<i>Wil. Ichth.</i> 279. <i>Raii syn. pisc.</i> 88.	<i>Gm. Lin.</i> 1342. <i>Gronov. Zooph.</i> No. 283.	
Trigla varia rostro diacantho, aculeis geminis ad utrumque oculum. <i>Arted. synon.</i> 74.	Le Gurneau. <i>Bloch ichth.</i> ii. 111. <i>tab.</i> 58.	
Trigla Gurnardus. Tr. digitis	La Trigle Gurneau. <i>De la Cepede Hist. des Poissons.</i> iii.	

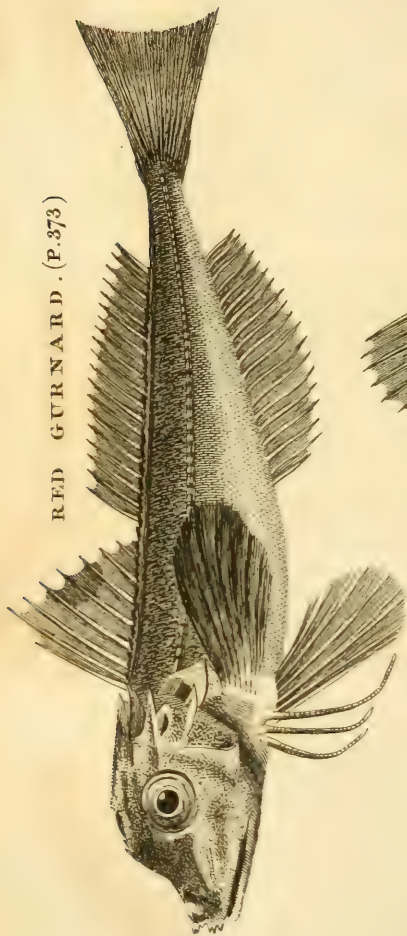
THE nose is pretty long, and sloping; the end bifurcated, and each side armed with three short spines; the eyes very large; above each are two short spines; the forehead and covers of the gills silvery tinged with green; the last finely radiated; the teeth small, placed in the lower and upper jaws, in the roof of the mouth, and base of the tongue; the nostrils minute, and placed on the sides of the nose. On the

DESCRIP-
TION.

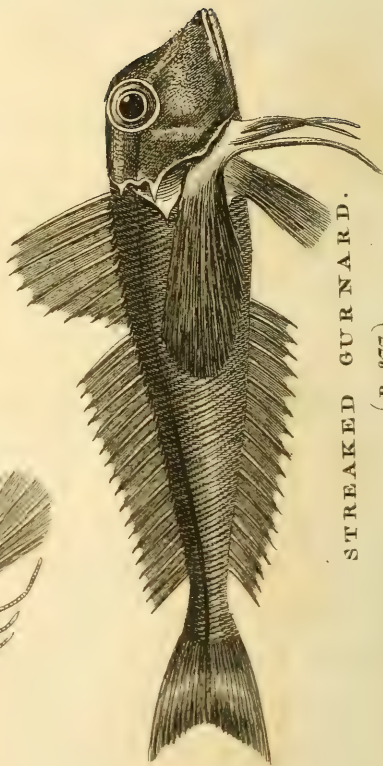
extremity of the gill covers is a strong, sharp, and long spine; beneath that, just above the pectoral fins, another. The first dorsal fin consists of eight spiny rays; the sides of the three first tuberculated; the second dorsal fin of nineteen soft rays; both fins lodged in a groove, rough on each side, and very slightly serrated; the pectoral fins do not extend as far as the anal fins, are cinereous, transparent, and supported by ten rays, bifurcated from their middle; the three beards at their base as usual; the ventral fins have six rays, the first spiny, and the shortest of all; the anal fin nineteen, each soft; the tail is bifurcated. The lateral line very prominent, strongly serrated, and of a silvery color. The back, tail, and a small space beneath the side line, are of a deep grey, covered with small scales, and are spotted with white and reddish yellow; the belly silvery.

These fishes are usually taken with the hook in deep water, bite eagerly even at a red rag; and sometimes are fond of sporting near the surface. They are often found of the length of two feet and a half.

RED GURNARD. (P. 373)



STREAKED GURNARD.
(P. 377)



Κόκκυξ? *Arist. Hist. an. lib.*
iv. c. 9. *Oppian Halieut.* i.
97.

Κόκκυξ ἐρυθρός. *Athenæus*,
vii. 309.

Pesce capone, Cocco, Organo.
Salvian. 191.

Le Rouget. *Belon*, 199.

Cuculus. *Rondel.* 287. *Gesner*
pisc. 305.

Smiedecknecht, Kurre-fische.
Schonevelde, 32.

Red Gurnard, or Rotchet.
Wil. Ichth. 281. *Raii syn.*
pisc. 89.

Trigla tota rubens, rostro pa-

rum bicorni, operculis bran-
chiarum striatis. *Arted. sy-*
non. 74.

Trigla Cuculus. *Tr. digitis*
ternis, linea laterali mutica.
Lin. syst. 497. *Gm. Lin.*
1343.

Le Rouget grondin. *Duhamel*
Tr. des Pesches. iii. 104.
sect. 5. tab. 7. fig. 1.

Le Rouget ou Rouget gron-
din. *Bloch ichth.* ii. 113.
tab. 59.

La Trigle grondin. *De la Ce-*
pède Hist. des Poissons, iii.
359.

2. RED.

THIS species agrees in its general appearance with the tub fish,* but differs in these particulars.

The covers of the gills are radiated; the spines are longer and slenderer; the nose armed on each side with two sharp spines; the fins and body are of a fuller red; the scales are larger; the head less and narrower; the pectoral fins are edged with purple, not with blue, and are much shorter, for when extended they do not reach to the anal fin. The side line is nearly smooth; the top of the back less serrated than that of the tub fish; the tail red and almost even at the end.

DESCRIP-
TION.

* The sapphirine gurnard. Ed.

3. PIPER. *Αρχα?* *Arist. Hist. an. lib.* Trigla Lyra. Tr. digitis ter-
 iv. c. 9. nis, naribus tubulosis. *Lin.*
Lyra. Rondel. 298. *Gesner* *Syst.* 496. *Gm. Lin.* 1342.
pisc. 516. Le Gronau. *Block ichth.* x.
 The Piper. *Wil. Ichth.* 282. 90. *tab.* 350.)
Raii Syn. pisc. 89. La Trigle Lyre. *De la Cepede*
Trigla rostro longo diacantho, *Hist. des Poissons.* iii. 845.
naribus tubulosis. Arted.
Syn. 74.

THIS species is frequently taken on the western coasts of this kingdom, and esteemed an excellent fish. It is also found off *Anglesey*.

DESCRIP-
TION.

The weight of one which was communicated to us by Mr. *Pitfield*,* was three pounds and an half; the thickest circumference thirteen inches, the lest, which was next the tail, only three; the length near two feet. The head was very large, and that part of the body next to it very thick; the nose divided into two broad plates, each terminated with three spines; on the inner corner of each eye was a strong spine; the bony plates of the head terminated on each side with another; the covers of the gills were armed with one very sharp and strong spine, and were prettily striated; immediately over

* We have been informed, that this fish is found at all times of the year on the western coasts, and is taken in nets.

PIPER GURNARD.



J. Haultier pinx.

the pectoral fin was another spine very large and sharp pointed. The nostrils very minute; the eyes large; the lower jaw much shorter than the upper; the teeth in both very minute. The first dorsal fin consisted of nine very strong sharp spines, the second of which was the longest; the second fin begins just behind the first, and consisted of eighteen soft rays; the pectoral fins were long, and had twelve branched rays; the ventral fins six, very strong and thick; the anal eighteen, the first spiny; the tail small, in proportion to the size of the fish, and forked. The back on each side the dorsal fins was armed with a set of strong and very large spines, pointing towards the tail like the teeth of a saw; the scales were small, but very hard and rough; the lateral line bent a little at its beginning, then went strait to the tail, and was almost smooth.

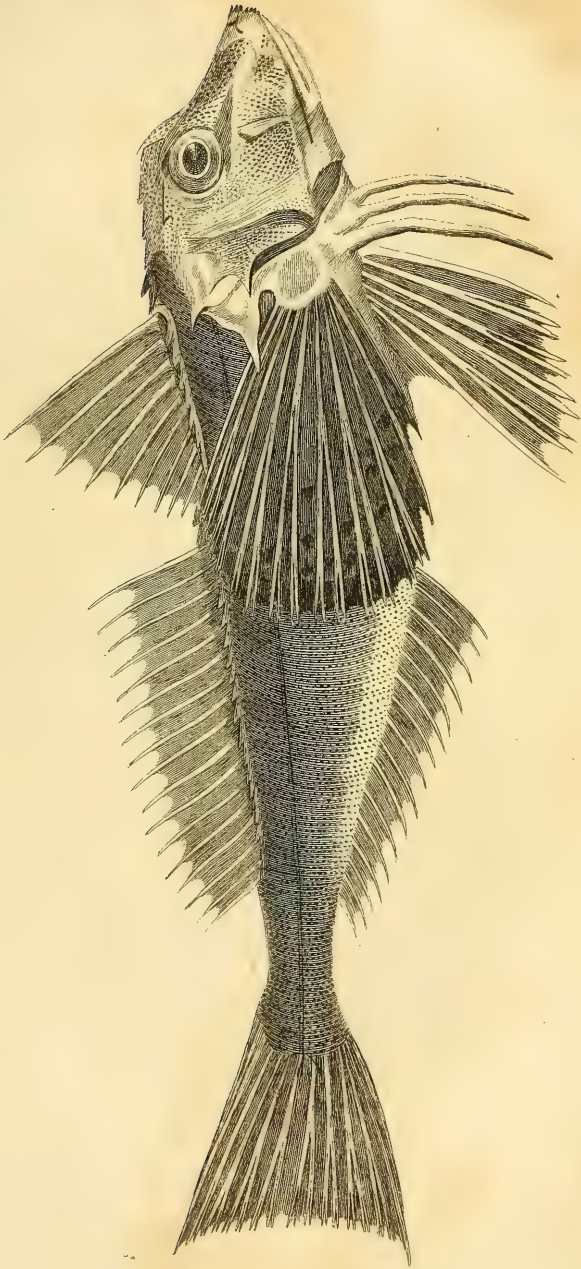
4. SAPPHIRINE. *Hirundo Aldrov.* The Tub-fish, *Cornub. Wil. Ichth.* 280. *Raii Syn. pisc.* 88. *Lin. Syst.* 497. *Gm. Lin.* 1344. *Knorrhane, Knoding, Knot, Smed. Faun. Suec.* No. 340. *Trigla capite aculeato, appendicibus utrinque tribus ad pinnas pectorales. Arted. ichth.* ii. 115. *tab.* 60. *synon.* 73. *Le Trigle hirondelle. De la Cepede Hist. des Poissons,* iii. 353. *Trigla hirundo. Tr. digitis ternis, linea laterali aculeata.*

DESCRIPTION. THIS species is of a more slender form than the preceding. The pupil of the eye is green; on the inner corner of each eye are two small spines, but it is at once distinguished from the other species by the size and colors of the pectoral fins, which are very broad and long, of a pale green, most beautifully edged, and spotted with rich deep blue.

The dorsal fins are lodged between two rows of spines, of a serrated form; the back is of a greenish cast; the side line is rough; the sides are tinged with red; the belly white.

These fish are found on the coast of *Cornwall*. We have also taken them off *Anglesey*.

SAPPHIRINE GURNARD.



Cuculus lineatus, the Streaked Gurnard. <i>Raii syn. pisc.</i> 165. <i>fig.</i> 11.	<i>Gesner pisc.</i> 567.	5. STREAK- ED.
Mullus imberbis. <i>Rondel.</i> 295.	Trigla lineata. <i>Gm. Lin.</i> 1345.	
<i>Wil. ichth.</i> 278.	L'Imbriago. <i>Bloch ichth.</i> x. 102. <i>tab.</i> 354.	

THIS is one of the *Cornish* fish communicated to Mr. *Petiver* by Mr. *Jago*.

The head is large, and, with the covers of the gills, marked with elegant radiations; the eyes large, the irides of a bright yellow; the mouth small, and without teeth; the jaws appear a little rough; above the corner of each eye nearest the nose, are two short spines; the armature beyond the head is finely serrated; on the gill-covers is one short spine; on the plate beyond them another, very strong; the first dorsal fin has nine strong spiny rays, the first finely serrated; the side line is prominent, and with the back, very scabrous to the touch; from the back and a little below the lateral line, are certain faint streaks pointing downwards; the top of the back is serrated; beneath the pectoral fins are the three appendages usual to the genus. The general color of this species is a bright red, more intense on the tail. The

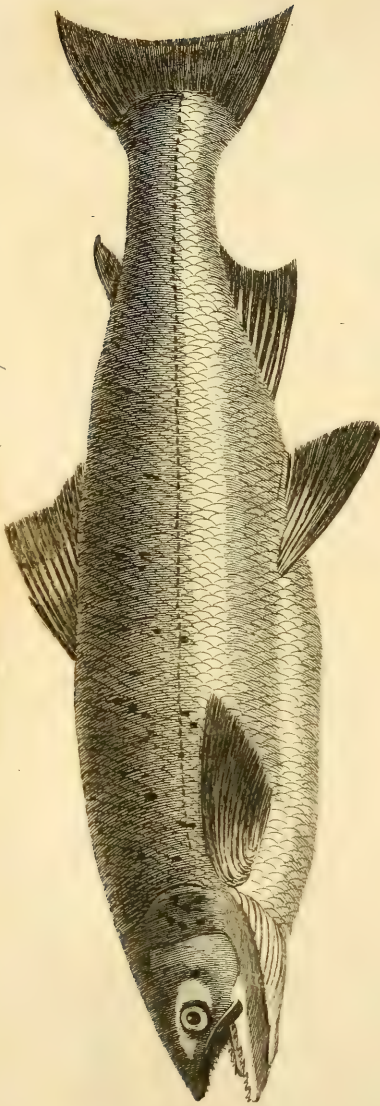
DESCRIP-
TION.

nose square and blunt. The pectoral fins large, and spotted with red and yellow.

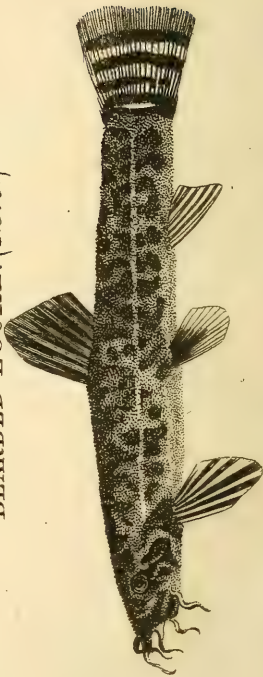
I met with some of these fishes at *Bright-helmstone*. The general length was ten inches and a half.

Mr. *Jago* imagines it to be the *Mullus imberbis* of *Rondeletius*.

COMMON SALMON. (P. 382.)



BEARDED LOCHE. (P. 379.)



M. Griffiths del.

SECT. IV.

ABDOMINAL.

GENUS XL. LOCHE.

EYES on the upper part of the head.

APERTURE to the gills closed below.

BEARDS several on the end of the upper jaw.

BODY of almost an equal thickness.

FIN one dorsal.

- | | |
|---|--|
| La Loche franche. <i>Belon</i> , 321. | Cobitis Barbatula. C. cirris 1. BEARDED. |
| Cobitis barbatula. <i>Rondel.</i> | sex capite inermi compresso. |
| <i>fluviat.</i> 204. | <i>Lin. Syst.</i> 499. <i>Gm. Lin.</i> |
| Cobitis fluviatilis barbatula. | 1348. <i>Gronov. Zooph.</i> No. |
| <i>Gesner pisc.</i> 404. | 202. |
| Smerling, Smerle. <i>Schone-</i> | Gronling. <i>Faun. Suec.</i> No. |
| <i>velde</i> , 31. | 341. |
| Loche, or Groundling. <i>Wil.</i> | Grundel. <i>Kram.</i> 396. <i>Wulff.</i> |
| <i>Ichth.</i> 265. <i>Raii Syn. pisc.</i> | <i>Boruss.</i> No. 40. |
| 124. | La Loche franche. <i>Bloch ichth.</i> |
| Cobitis tota glabra maculosa, | i. 179. <i>tab.</i> 31. <i>f.</i> 3. |
| corpore subtereti. <i>Arted.</i> | Le Cobite Loche. <i>De la Cepede</i> |
| <i>Synon.</i> 2. | <i>Hist. des Poissons</i> , v. 8. |

THE loche is found in several of our small rivers, keeping at the bottom of the gravel, and

is on that account, in some places, called the *Groundling*: it is frequent in the stream near *Amesbury*, in *Wiltshire*, where the sportsmen, through frolick, swallow it down alive in a glass of white wine.

DESCRIP-
TION.

The largest we ever heard of was four inches and three quarters in length, but they seldom arrive to that size. The mouth is small, placed beneath, and has no teeth; on the upper mandible are six small beards, one at each corner of the mouth, and four at the end of the nose; the dorsal fin consists of eight rays; the pectoral of eleven; the ventral of seven; the anal of six; the tail is broad, and has sixteen or seventeen rays; the body is smooth and slippery, and almost of the same thickness: the color of the head, back, and sides, is in some white, in others of a dirty yellow, very elegantly marked with large spots, consisting of numberless minute black specks: the pectoral, dorsal, and caudal fins, are also spotted; the belly and ventral fins of a pure white; the tail broad, and a little rounded.

- | | | |
|---------------------------------------|--|-------------|
| Tonglake. <i>Faun. Suec.</i> 342. | <i>Gronov. Zooph.</i> 200. | 2. SPINOUS. |
| <i>Raii syn. pisc.</i> 124. | La Loche de riviere. <i>Bloch</i> | |
| <i>Rondel. fluviat.</i> 204. | <i>ichth.</i> i. 177. <i>tab.</i> 31. <i>f.</i> 2. | |
| <i>Cobitis aculeata. Gesner pisc.</i> | Le Cobite Tænia. <i>De la Ce-</i> | |
| 404. | <i>pede Hist. des Poissons.</i> v. | |
| <i>Cobitis Tænia. C. cirris sex</i> | 14. | |
| <i>spina suboculari. Gm. Lin.</i> | | |
| 1349. | | |

THE head of this species is broad and flat, the body compressed; by the mouth are six beards, and beneath the eye a bifurcated hooked spine, white and very sharp; the back and sides marked with whitish lines, dotted with black; the belly white; the tail rounded. Length three inches three lines.

DESCRIP-
TION.

Discovered in the *Trent* near *Nottingham* in 1782; it is also found in *Maeler* lake in *Sweden*.

GENUS XLI. SALMON.

RAYS branchiostegous unequal in number.

FINS two dorsal; the second thick, and without rays.

* With teeth.

- | | |
|--|---|
| 1. COMMON. <i>Salmo Plinii Lib.</i> ix. c. 18. | <i>Gm. Lin.</i> 1348. <i>Gronov.</i> |
| <i>Ausonius Moscl.</i> 97. | <i>Zooph.</i> No. 369. |
| <i>Salmone. Salviar.</i> 100. | <i>Lax. Faun. Suec.</i> No. 122. |
| <i>Le Saulmon. Belon,</i> 271. | <i>Lachss. Wulff. Boruss.</i> No. 42. |
| <i>Salmo. Rondel. fluviat.</i> 167. | <i>Le Saumon. Duhamel Tr. des</i> |
| <i>Gesner pisc.</i> 824. <i>Schone-</i> | <i>Pesches,</i> ii. 184. <i>tab.</i> 1. |
| <i>velde,</i> 64. | <i>Le Becard. Bloch ichth.</i> iii. |
| <i>Salmon. Wil. Ichth.</i> 189. <i>Raii</i> | <i>123. tab.</i> 98. (<i>male</i>). |
| <i>Syn. pisc.</i> 63. | <i>Le Saumon. ib.</i> i. 106. <i>t.</i> 20. |
| <i>Salmo rostro ultra inferiorem</i> | <i>(female).</i> |
| <i>maxillam sæpe prominente.</i> | <i>Le Salmone Saumon. De la Ce-</i> |
| <i>Arted. Synon.</i> 22. | <i>pède Hist. des Poissons,</i> v. |
| <i>Salmo Salar. Lin. Syst.</i> 509. | <i>159.</i> |

THE salmon is a northern fish, being unknown in the *Mediterranean* sea, and other warm climates; it is found in *France* in some of the rivers that empty themselves into the ocean,* and north as far as *Greenland*; it is also very common in *Newfoundland*, and the northern and western parts of *North America*. Salmon are taken in the rivers of *Kamtschatka*,† of the same species with the *European* kind.

* *Rondel. fluviat.* 167.

† *Hist. Kamtsch.* 143.

They are in several countries a great article of commerce, being cured different ways, by salting, pickling, and drying: there are stationary fisheries in *Iceland*, *Norway*,* and the *Baltic*, but we believe no where greater than those at *Coleraine* in *Ireland*; and in *Great Britain* at *Berwick*, and in some of the rivers of *Scotland*.†

The salmon was known to the *Romans*, but not to the *Greeks*: *Pliny* speaks of it as a fish found in the rivers of *Aquitaine*: *Ausonius* enumerates it among those of the *Moselle*.

*Nec te puniceo rutilantem viscere Salmo
Transierem, latæ cujus vaga verbera caudæ
Gurgite de medio summas referuntur in undas,
Occultus placido cum proditur æquore pulsus.
Tu loricato squamosus pectore, frontem
Lubricus, et dubiæ facturur fercula cænæ,
Tempora longarum fers incorrupta morarum,
Præsignis maculis capitis, cui prodiga nutat
Alvus, opimatoque fluens abdomine venter.*

Nor I thy scarlet belly will omit,
O Salmon, whose broad tail with whisking strokes
Bears thee up from the bottom of the stream
Quick to the surface; and the secret lash
Below, betrays thee in the placid deep.

* There was, about the year 1578, a pretty considerable salmon fishery at *Cola*, in *Russian Lapland*. *Hackluyt. voy.* i. 416.

† They are never known to frequent those parts of the *English coast* which are composed of chalk.

Arm'd in thy flaky mail, thy glossy snout
 Slippery escapes the fisher's fingers ; else
 Thou makest a feast for nicest-judging palates :
 And yet long uncorrupted thou remainest :
 With spotted head remarked, and wavy spread,
 Of paunch immense o'erflowing wide with fat.

ANONYMOUS.

ASCENDS
 RIVERS.

The salmon is a fish that lives both in the salt and fresh waters, quitting the sea at certain seasons for the sake of depositing its spawn in security, in the gravelly beds of rivers remote from their mouths. There are scarcely any difficulties but what they will overcome, in order to arrive at places fit for their purpose : they will ascend rivers for hundreds of miles, force themselves against the most rapid streams, and spring with amazing agility over cataracts of several feet in height. Salmon are frequently taken in the *Rhine* as high up as *Basil* ; they gain the sources of the *Lapland* rivers * in spite of their torrent-like currents, and surpass the perpendicular falls of *Leixslip*, † *Kennerth*, ‡ and *Pont aberglaslyn* ; § these last feats we have been witness to, and seen the efforts of

SALMON
 LEAPS.

* *Scheff. Lap.* 139.

† Near *Dublin*.

‡ On the *Tivy* in *South Wales*, which *Michael Drayton* celebrates in his *Polyolbion* on this account.

§ Amidst *Snowdon* hills, a wild scene in the style of *Salvator Rosa*.

scores of fish, some of which succeeded, others miscarried, during the time of our stay.

It may here be proper to contradict the vulgar error of their taking their tail in their mouth when they attempt to leap; though without doubt it brings the tail very near the head to make the effort in the water, afterwards it becomes straight with a strong tremulous motion.

Other particulars relating to the natural history of this fish, we shall relate in our accounts of the fisheries, either from our own observations, or from such as have been communicated to us from different places: the fullest we have been favored with, is from the late Mr. *Potts*, of *Berwick*, to whom the public is indebted for the following very curious history of the salmon fishery on the *Tweed*.

At the latter end of the year, or in the month SPAWNING. of *November*, the salmon begin to press up the rivers as far as they can reach, in order to spawn; when that time approaches they search for a place fit for the purpose; the male and female unite in forming a proper receptacle for it in the sand or gravel, about the depth of eighteen inches; in this the female deposits her spawn, the male his milt, which they cover carefully, as it is said, with their tails, for after spawning they are observed to have no skin on

that part. The spawn lies buried till spring, if not disturbed by violent floods ; but the salmon hasten to sea as soon as they are able, to purify and cleanse themselves, and to recover their strength ; for after spawning they become very poor and lean, and then are called *Kipper*. When the salmon first enter the fresh water, they are observed to have abundance of insects adhering to them, especially above the gills ; these are the *Lernææ salmoneæ* of *Linnæus*, and are signs that the fish are in high season. These animals die and drop off, soon after the salmon have left the sea.

About the latter end of *March* the spawn begins to exclude the young, which gradually increase to the length of four or five inches, and are then termed *Smelts* or *Smouts* : about the beginning of *May* the river is full of them ; it seems to be all alive ; there can be formed no idea of the numbers without seeing them ; but a seasonable flood then hurries them all to the sea, scarcely any or very few being left in the river.

About the middle of *June* the earliest of the fry begin to drop, as it were, into the river again from the sea, at that time about twelve, fourteen, or sixteen inches, and by a gradual progress, increase in number and size till about

the end of *July*, which is at *Berwick* termed the height of *Gilse* time, the name given to the fish at that age; the end of *July*, or beginning of *August* they lessen in number, but increase in size, some being six, seven, eight, or nine pounds in weight; this appears to be a surprising quick growth, yet we have received from a gentleman at *Warrington*, an instance still more so; a kipper salmon weighing seven pounds three quarters, taken on the 7th of *February*, being marked with a scissars, on the back-fin, and tail, and turned into the river, was again taken on the 17th of *March* following, and then was found to weigh seventeen pounds and a half.

QUICK
GROWTH.

All fishermen agree, that they never find any food in the stomach of this fish. It is likely they may neglect their food entirely during the time of spawning, as *sea lions* and *sea bears* are known to do for months together during their breeding season; and it may be observed, that like those animals, the salmon return to the sea lank and lean, and come from the salt water in good condition. It is evident that at times their food is both fish and worms, for the angler uses both with good success; as well as a large, gaudy, artificial fly, which probably the fish mistakes for a gay *libellula* or dragon fly.

FOOD
UNCERTAIN.

CAPTURE. The capture in the *Tweed*, about the month of *July*, is prodigious ; in a good fishery, often a boat load, and sometimes nearly two, are taken in a tide ; some few years ago there were above seven hundred fishes taken at one hawl, but from fifty to a hundred is very frequent : the coopers in *Berwick* then begin to salt both Salmon and Gilses in pipes, and other large vessels, and afterwards barrel * them to send abroad, having then far more than the *London* markets can take off their hands.

Most of the salmon taken before *April*, or to the setting in of the warm weather, is sent fresh to *London* in baskets, unless now and then the vessel is disappointed by contrary winds, of sailing immediately ; in that case the fish is brought ashore again to the coopers' offices, boiled, pickled, and kitted, and sent to the *London* markets by the same ship, and fresh salmon put in the baskets in lieu of the stale ones. At the beginning of the season, when a ship is on the point of sailing, a fresh clean salmon will sell from a shilling to eighteen pence a pound, and most of the time that this part of the trade is carried on, the prices are from five to nine shil-

* The salmon barrel holds above forty-two gallons wine measure.

lings per stone,* the value rising and falling according to the plenty of fish, or the prospect of a fair or foul wind. Some fishes are sent in this manner to *London* the latter end of *September*, when the weather grows cool, but then they are full of large roes, grow very thin bellied, and are not esteemed either palatable or wholesome. The price of fresh fishes in the month of *July*, when they are most plentiful, has been known to be as low as 8*d.* per stone, but last year never less than 16*d.* and from that to 2*s.* 6*d.*

The season for fishing in the *Tweed* begins SEASON. *November* 30th, but the fishermen work very little till after *Christmas*; it ends on *Michaelmas-Day*; yet the corporation of *Berwick* (who are conservators of the river) indulge the fishermen with a fortnight past that time, on account of the change of the style.

There are on the river forty-one considerable fisheries extending upwards, about fourteen miles from the mouth (the others above being of no great value) which are rented for nearly 5400*l.* per annum. The expence attending the servants' wages, nets, boats, &c. amount to 5000*l.*

* A stone of salmon weighs 18*lb.* 10 oz. and half, or in other terms, four stones, or fifty-six pounds avoirdupoise, is only three stones, or forty-two pounds, fish weight at *Berwick*.

more, which together makes up the sum 10400*l*. Now in consequence the produce must defray all, and no less than twenty times that sum of fishes will effect it, so that 208000 salmon must be caught there one year with another.

There is a misfortune attending the river *Tweed*, which is worthy a parliamentary remedy; for there is no law for preserving the fish in it during the fence months, as there is in the case of many other *British* rivers. This being the boundary between the two kingdoms, part of it belongs to the city of *Berwick*, and the whole north side (beginning about two miles from the town) is entirely *Scotch* property. From some disagreement between the parties they will not unite for the preservation of the fish, so that in some fisheries on the north side they continue killing salmon the whole winter, when the death of one fish is the destruction of thousands.*

The legislature began very early to pay attention to this important article: by the 13th *Edward I.* there is an act which prohibits the capture of the salmon from the Nativity of our Lady to St. *Martin's Day*, in the waters of the *Humber, Ouse, Trent, Done, Arre, Derwent*,

* I think that this grievance is now removed.

Wharfe, Nid, Yore, Swale, and Tees; and other monarchs in aftertimes, provided in like manner for the security of the fish in other rivers.

Scotland possesses great numbers of fine fisheries on both sides of that kingdom. The *Scotch* in early times had most severe laws against killing this fish; for the third offence was by a law of *James IV.* made capital. Before that, the offender had power to redeem his life.* They were thought in the time of *Henry VI.* a present worthy of a crowned head, for in that reign the Queen of *Scotland* sent to the Dutchess of *Clarence*, ten casks of salted salmon, which *Henry* directed to pass duty-free. The salmon are cured in the same manner as at *Berwick*, and a great quantity is sent to *London* in the spring; after that time the adventurers begin to barrel and export them to foreign countries; but we believe that commerce is far less lucrative than it was in former times, partly owing to the great increase of the *Newfoundland* fishery, and partly to the general relaxation of the discipline of abstinence in the *Romish* church.

Ireland (particularly the north) abounds with this fish: the most considerable fishery is at *Cranna*, on the river *Ban*, about a mile and an

* *Regiam Majestatem. Stat. Rob. III. c. 7. Skene's Acts. James IV. Parl. VI.*

half from *Coleraine*. When I made the tour of that hospitable kingdom in 1754, it was rented by a neighboring gentleman for 620*l.* a year, who assured me that the tenant, his predecessor, gave 1600*l.* per ann. and was a much greater gainer by the bargain for the reasons before-mentioned, and on account of the number of poachers who destroy the fish in the fence months. The mouth of the *Ban* faces the north, and is finely situated to receive the fishes that roam along the coast, in search of an inlet into some fresh water, as they do all along that end of the kingdom which opposes itself to the northern ocean. We have seen near *Ballycastle*, nets placed in the sea at the foot of the promontories that jut into it, which the salmon strike into as they are wandering close to shore, and numbers are taken by that method.

In the *Ban* they fish with nets eighteen score yards long, and are continually drawing night and day during the whole season, which we think lasts about four months, two sets, of sixteen men each, alternately relieving one another. The best draught is when the tide is coming in: we were told that at a single one there were once eight hundred and forty fishes taken. A few miles higher up the river is a wear, where a considerable number of fishes that escape the nets

are taken. We were lately informed, that in the year 1760 about three hundred and twenty tons were taken in the *Cranna* fishery.

The salmon are cured in this manner: they are first split, and rubbed with fine salt; and after lying in pickle in great tubs, or reservoirs, for six weeks, are packed up with layers of coarse brown *Spanish* salt in casks, six of which make a ton. These are exported to *Leghorn* and *Venice* at the price of twelve or thirteen pounds per ton, but formerly of from sixteen to twenty-four pounds each.

The salmon is a fish so generally known, that a very brief description will serve. The largest we ever heard of weighed seventy-four pounds. The color of the back and sides are grey, sometimes spotted with black, sometimes plain: the covers of the gills are subject to the same variety; the belly silvery; the nose sharp pointed; the end of the under jaw in the males often turns up in form of a hook; sometimes this curvature is very considerable; it is said that they lose this hook when they return to the sea; the teeth are lodged in the jaws and on the tongue, and are slender, but very sharp; the tail is a little forked.

DESCRIP-
TION.

2. GREY. The Grey, i. e. cinereus seu Lachss-forellen mit Schwartz-
 Griseus. *Wil. Ichth.* 193. grauen flecken oder punkt-
Raii Syn. pisc. 63. chens. *Wulff. Boruss.* No. 43.
Salmo maculis cinereis, caudæ Shaw Gen. Zool. v. 47.
 extremo æquali. *Arted. Sy-* *Salmo Schiefermuleri. Bloch*
non. 23. *ichth.* iii. 133. *tab.* 103?
Salmo Eriox. Lin. Syst. 509. Le Salmone Schieffermuller.
Gm. Lin. 1366. ? *De la Cepede Hist. des Pois-*
Gralax. Faun. Suec. No. 346. *sons.* v. 187?

[IN compliance with the irresistible impulse of nature, this fish ascends many *British* rivers, both in *England* and *Wales*, particularly the latter, but some of them earlier than others, from the beginning of *June* to late in *July*.

DESCRIP-
TION.

In make, it nearly resembles the salmon, but the head is rather larger in proportion; and the body rounder, or not so much compressed; the tail is not so much indented, and it is altogether of a lighter color. It is greatly inferior in size, seldom exceeding eighteen inches in length, or two pounds in weight. When it has been supposed considerably to exceed that size, the observer was, it is more than probable, deceived by some singular appearance of the common salmon, or perhaps a hybrid fish; for, that such exist, those persons, who have paid most attention to this subject of ichthyology, have not a

doubt.* It has teeth in the upper and lower jaws, and two rows on the tongue. The back, and sides above the lateral line, are of a deep grey color, marked with numerous roundish, cruciform, or crescent shaped, purplish, or dusky spots. The lateral line is strait; below that prevails a lucid silvery color. Rays of the first dorsal fin are eleven, of the pectoral eleven, ventral nine, anal nine.

We do not know that this fish enters the *Conwy*, or any other river between that and the *Dee*; but from the *Conwy* towards the southwest, and south, along the coast of *Caernarvonshire*, and *Meirioneth*, to *South Wales*, it is by no means uncommon; in the latter it is called the *Serwin*.—Our observant ancestors in *North Wales* distinguished it, by the name of *Gwyniad* (*gwyn iâd*) white-pate, from the salmon, which they called *Gleisiad*, (*glâs iâd*); a term exactly corresponding with *Cyanocephalus* or *blue-cap*, a name given to the salmon (for it can be no other species) under some particular circumstances, as *Willughby* tells us.

H. D.†

* *Wil. Ichthyol.* p. 193.

† The editor is indebted to the reverend *Hugh Davies* for the revision and additions to this article. ED.

3. WHITE. Le Salmone blanc. *De la Cepede Hist. des Poissons*, v. 223.

THIS species migrates out of the sea into the river *Esk* in *Cumberland* from *July* to *September*, and is called from its color the *Whiting*. When dressed, their flesh is red, and most delicious eating. They have, on their first appearance from the salt water, the *lernæa salmonea*, or salmon louse, adhering to them. They have both melt and spawn; but no fry has as yet been observed. This is the fish called by the *Scots*, *Phinocs*.

DESCRIP-
TION.

They never exceed a foot in length. The upper jaw is a little longer than the lower: in the first are two rows of teeth; in the last, one; on the tongue are six teeth.

The back is strait; the whole body of an elegant form; the lateral line is strait; color, between that and the top of the back, dusky and silvery intermixed; beneath it, of an exquisite silvery whiteness; first dorsal fin spotted with black; tail black, and much forked. The first dorsal fin has eleven rays; pectoral, thirteen; ventral, nine; anal, nine.

Trutta taurina, apud nos in <i>Northumbria</i> a Bull-trout. <i>Charlton ex. pisc.</i> 36.	gris, iridibus brunneis, pin- na pectorali punctis sex. <i>Lin.</i> <i>Syst.</i> 509. <i>Gm. Lin.</i> 1366.	4. SEA TROUT.
Trutta Salmonata, the Sal- mon-trout, Bull-trout, or Scurf. <i>Raii Syn. pisc.</i> 63. <i>Wil. Ichth.</i> 193.	<i>Gronov. Zooph.</i> No. 367. Orlax, Borting. <i>Faun. Suec.</i> No. 347. La truite saumonée. <i>Bloch</i> <i>ichth. i.</i> 117. <i>tab.</i> 21.	
Salmo latus, maculis rubris nigrisque, cauda æquali. <i>Arted. Synon.</i> 24.	Le Salmone truite saumonée. <i>De la Cèpede Hist. des Pois-</i> <i>sons,</i> v. 204.	
Salmo Trutta. S. ocellis ni-		

THIS species migrates like the salmon up several of our rivers; spawns, and returns to the sea. That, which I describe, was taken in the *Tweed* below *Berwick* in *June* 1769.

The shape was more thick than that of the common trout; the weight was three pounds two ounces. The irides were silvery; the head thick, smooth, and dusky, with a gloss of blue and green; the back of the same color, which grows fainter towards the side line; the back plain, but the sides as far as the lateral line marked with large distinct, irregularly shaped spots of black; the lateral line strait; the sides beneath the line, and the belly white; the tail broad, and even at the end. The dorsal fin had twelve rays; the pectoral fourteen; the ventral nine; the anal ten.

DESCRIP-
TION.

The flesh when boiled is of a pale red, but well flavored.*

[We add the description of a female of this species taken by the reverend *Hugh Davies* in 1795.

“Length two feet. The pupil of the eye black, the irides silvery; sharp teeth in both jaws and on the tongue; the lateral line strait; the first dorsal fin nearer the head than the tail; the second dorsal and anal fins opposite and within two inches of the tail, which was nearly even at the end. The whole fish of a dusky purplish color; the sides and back dotted with dusky spots. ED.

Mr. *Willughby*’s account of the Salmon, Bull, or Scurf Trout is obscure; whether the same with this?

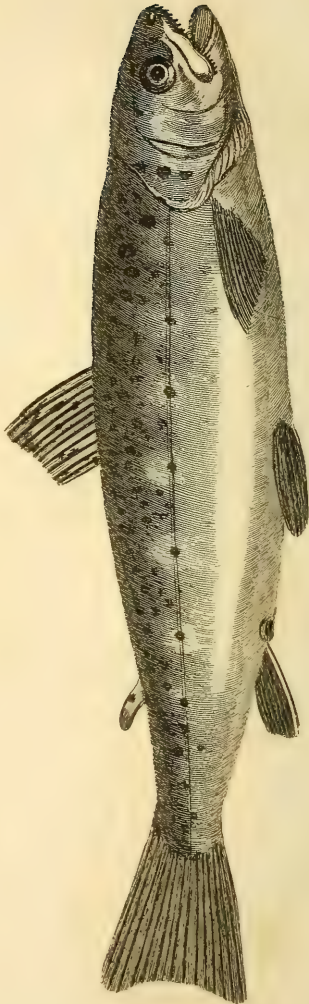
* The reverend *George Barry* in his *History of the Orkney isles*, (p. 289.) says that the Bull Trout is found in great numbers in the *Loch of Stennis*; but as the flesh is white and dry, it is seldom sought after. Doctor *Edmonston*† on the contrary, says that the Sea Trout which are numerous in *Zetland*, are very delicate. ED.

† View of the *Zetland* islands. ii. 315.

SAMLET. (P. 404.)



RIVER TROUT. (P. 399.)



Salar. <i>Ausonius Mosel.</i> 88.	inferiore longiore. <i>Arted.</i>
Salar et varius, Trotta. <i>Sal-</i>	<i>Synon.</i> 23.
<i>vian.</i> 96.	Salmo Fario. <i>Lin. Syst.</i> 509.
La Truite. <i>Belon,</i> 274.	<i>Gm. Lin.</i> 1367.
Trutta fluviatilis. <i>Rondel. flu-</i>	Laxoring, Forell, Stenbit.
<i>viat.</i> 169. <i>Gesner pisc.</i> 1002.	<i>Faun. Suec.</i> No. 348.
Foren, Forellen. <i>Schonevelde,</i>	La Truite. <i>Bloch ichth.</i> i. 121.
77.	<i>tab.</i> 22.
A Trout. <i>Wil. Ichth.</i> 199. <i>Raii</i>	Le Salmone truite. <i>De la Ce-</i>
<i>Syn. pisc.</i> 65.	<i>pede Hist. des Poissons,</i> v.
S. maculis rubris, maxilla	189.

5. RIVER
TROUT.

IT is matter of surprize that this common fish has escaped the notice of all the antients, except *Ausonius*: it is also singular, that so delicate a species should be neglected at a time when the folly of the table was at its height, and that the epicures should overlook a fish which is found in such quantities in the lakes of their neighborhood, when they ransacked the universe for dainties. The milts of *Murænæ* were brought from one place; the livers of *Scari* from another;* and *Oysters* even from so remote a spot as our *Sandwich*:† but there was, and is, a fashion in the article of good living. The *Romans* seem to have despised the trout, the piper, and the doree; and we believe Mr. *Quin* himself

* *Suetonius, vita Vitellii.*

† *Juvenal Sat.* IV. 141.

would have resigned the rich paps of a pregnant sow,* the heels of camels,† and the tongues of Flamingos,‡ though dressed by *Heliogabalus's* cooks, for a good jowl of salmon with lobster sauce.

When *Ausonius* speaks of this fish, he makes no eulogy on its goodness, but celebrates it only for its beauty.

Purpureisque SALAR stellatus tergore guttis.

With purple spots the *Salar's* back is stained.

These marks point out the species he intended: what he meant by his *Fario* is not so easy to determine: whether any species of trout, of a size between the *salar* and the salmon; or whether the salmon itself, at a certain age, is not very evident.

*Teque inter geminos species, neutrumque et utrumque,
Qui nec dum SALMO, nec SALAR ambiguusque.
Amborum medio FARIO intercepte sub ævo.*

Salmon or *salar*, I'll pronounce thee neither;
A doubtful kind, that may be none, or either,
Fario, when stopt in middle growth.

In fact the colors of the trout, and its spots, vary greatly in different waters, and in different

* *Martial, Lib. XIII. Epig. 44.*

† *Lamprid. vit. Heliogab.*

‡ *Martial, Lib. XII. Epig. 71.*

seasons ; yet each may be reduced to one species. In *Llynteivi*, a lake in *South Wales*, are trouts called *Coch y dail*, marked with red and black spots as big as sixpences ; others unspotted, and of a reddish hue, that sometimes weigh nearly ten pounds, but are bad tasted.

In *Lough Neagh* in *Ireland*, are trouts called there *Buddaghs*, which I was told sometimes weighed thirty pounds, but it was not my fortune to see any during my stay in the neighborhood of that vast water.

Trouts (probably of the same species) are also taken in *Uls-water*, a lake in *Cumberland*, of a much superior size to those of *Lough Neagh*. These are supposed to be the same with the trout of the lake of *Geneva* ; a fish I have eaten more than once, and think but a very indifferent one.

In the river *Einion*, not far from *Machynlleth*, in *Montgomeryshire*, and in one of the *Snowdon* lakes, is found a variety of trout, which is naturally deformed, having a strange crookedness near the tail, resembling that of the perch before described. We dwell the less on these monstrous productions, as our friend the Hon. *Daines Barrington*, has already given an account of them in an ingenious dissertation on

some of the *Cambrian* fishes, published in the *Philosophical Transactions* of the year 1767.

The stomachs of the common trouts are uncommonly thick, and muscular. They feed on the shell-fish of lakes and rivers, as well as on small fish. They likewise take into their stomachs gravel, or small stones, to assist in comminuting the testaceous parts of their food.

GILLAROO
TROUT.*

The trouts of certain lakes in *Ireland*, such as those of the province of *Galway*, and some others, are remarkable for the great thickness of their stomachs, which, from some slight resemblance to the organs of digestion in birds, have been called gizzards: the *Irish* name the species that has them, *Gillaroo* trouts. These stomachs are sometimes served up to table, under the former appellation. It does not appear to me, that the extraordinary strength of stomach in the *Irish* fish, should give any suspicion, that it is a distinct species: the nature of the waters might increase the thickness; or the superior quantity of shell-fish, which may more frequently call for the use of its comminuting powers than those of our trouts, might occasion this difference. I had the opportunity of comparing the stomach of a great *Gillaroo* trout, with a

* *Philosoph. Transac.* Vol. LXIV. p. 116, 310. *Sow. Br. Misc. tab.* 61.

large one from the *Uxbridge* river. The last, if I recollect, was smaller, and out of season ; and its stomach (notwithstanding it was very thick) was much inferior in strength to that of the former ; but on the whole, there was not the least specific difference between the two subjects.

Trouts are most voracious fish, and afford excellent diversion to the angler ; the passion for the sport of angling is so great in the neighborhood of *London*, that the liberty of fishing in some of the streams in the adjacent counties, is purchased at the rate of ten pounds per annum.

These fishes shift their quarters to spawn, and, like the common salmon, make up towards the heads of rivers to deposit their roes. The under jaw of the trout is subject, at certain times, to the same curvature as that of the salmon.

A trout taken in *Llynaled*, in *Denbighshire*, which is famous for an excellent kind, measured seventeen inches, its depth three and three quarters ; its weight was one pound ten ounces ; the head was thick ; the nose rather sharp ; the upper jaw a little longer than the lower ; both jaws, as well as the head, were of a pale brown, blotched with black ; the teeth sharp and strong, disposed in the jaws, roof of the mouth and tongue, as is the case with the whole genus, except the *Gwyniad*, which is toothless, and the

DESCRIP-
TION.

Grayling, which has none on its tongue. The back was dusky; the sides tinged with a purplish bloom, marked with deep purple spots, mixed with black, above and below the side line which was strait; the belly white. The first dorsal fin was spotted; the spurious fin brown, tipped with red; the pectoral, ventral, and anal fins, of a pale brown; the edges of the anal fin white; the tail very little forked when extended.

6. SAMLET. Le Tacon? *Belon*. 275.
 Salmulus, *Herefordiæ* Samlet
 dictus. *Wil. Ichth.* 192.
 Salmulus, the Samlet *Here-*
fordiensibus, Branlin et Fin-
 gerin *Eboracensibus*. *Raii*
Syn. pisc. 63.

Salmoneta, a Branlin. *Ray's*
Letters, 199.

Le Salmone rille. *De la Ce-*
pede Hist. des Poissons, v.
 226.?

THE samlet is the lest of the salmon kind, is frequent in the *Wye*, in the upper part of the *Severn*, and the rivers that run into it, in the north of *England*, and in *Wales*. It is by several imagined to be the fry of the salmon; but our reasons for dissenting from that opinion are these:

First, It is well known that the salmon fry never continue in fresh water the whole year; but as numerous as they appear on their first

escape from the spawn, all vanish on the first vernal flood that happens, which sweeps them into the sea, and leaves scarcely one behind.

Secondly, The growth of the salmon fry is so quick and so considerable, as suddenly to exceed the bulk of the largest samlet; for example, the fry that have quitted the fresh water in the spring, not larger than gudgeons, return into it again a foot or more in length.

Thirdly, Salmon attain a considerable bulk before they begin to breed; the samlets, on the contrary, are found male and female,* (distinguished by the milt and roe) of their common size.

Fourthly, They are found in the fresh waters in all times of the year, and even at seasons when the salmon fry have gained a considerable size. It is well known, that near *Shrewsbury* (where they are called *Samsons*) they are found in such quantities in the month of *September*, that a skilful angler, in a coracle, will take with a fly from twelve to sixteen dozen in a day.

Samlets spawn in *November* and *December*, at which time those of the *Severn* push up towards the head of that fair river, quitting the lesser brooks, and return into them again when they have done.

* It has been vulgarly imagined, that there were no other than males of this species.

They have a general resemblance to the trout, therefore must be described comparatively.

First, the head is proportionably narrower, and the mouth less than that of the trout.

Secondly, They seldom exceed six or seven inches in length; at most, eight and a half.

Thirdly, The pectoral fins have generally but one large black spot, though sometimes a single small one attends it; whereas the pectoral fins of the trout are more numerous marked.

Fourthly, The spurious or fat fin on the back is never tipped with red; nor is the edge of the anal fin white.

Fifthly, The spots on the body are fewer, and not so bright. It is also marked from the back to the sides with six or seven large bluish bars; but this is not a certain character, as the same is sometimes found in young trouts.

Sixthly, The tail of the samlet is much more forked than that of the trout.

These fish are very frequent in the rivers of *Scotland*, where they are called *Parrs*.* They

* This species is twice figured, once under the name of Samlet, and again under that of *Parr*, in the present as it was in the former edition of the *British Zoology*; in the latter the engraving of the *Parr* was inadvertently referred to No. 78, instead of No. 148, an error which has not escaped the severe observation of a recent writer. It may here be remarked that the spots on the sides of the *Parr* of *Scotland* are much larger



CHARR.

G. Wilkinson del.

are also common in the *Wye*, where they are known by the name of *Skirlings*, or *Lasprings*.

L'Ombre, ou Humble. <i>Belon</i> , 281.	<i>Salmo alpinus</i> . <i>Lin. Syst.</i> 510. 7. CHARR. <i>Gm. Lin.</i> 1370. <i>Gronov.</i>
Umbla seu Humble <i>Belonii</i> <i>Gesner pisc.</i> 1005.	<i>Zooph.</i> No. 372. <i>Roding, Lapponibus Raud.</i>
Umbla minor. <i>Gesner pisc.</i> 1013.	<i>Faun. Suec.</i> No. 124. Charr-fish. <i>Phil. Trans.</i> 1755.
Torgoch <i>Wallis. Westmor-</i> <i>landis.</i> Red Charre <i>Lacus</i> <i>Winander mere. Wil. Ichth.</i> 196. <i>Raii syn. pisc.</i> 65.	210. L'Ombre. <i>Bloch ichth.</i> iii. 125. <i>tab.</i> 99. La Truite des Alpes. <i>ib.</i> iii. 135. <i>tab.</i> 104.
<i>Salmo vix pedalis</i> , pinnis ven- tralibus rubris, maxilla in- feriore longiore. <i>Arted. Syn.</i> 25.	Le Salmone bergforelli. <i>De la</i> <i>Cepede Hist. des Poissons</i> , v. 203.?

THE charr is an inhabitant of the lakes of the north, and of those of the mountainous parts of *Europe*. It affects clear and pure waters, and is very rarely known to wander into running streams, except into such whose bottom is similar to the neighboring lake.

It is found in vast abundance in the cold lakes on the summits of the *Lapland Alps*, and is almost the only fish that is met with in any plenty in those regions, where it would be wonderful

and more distinct than those on the common Samlet, and give it a striking resemblance to the *Salmon Rille* of *De la Cepede*; but the latter is said to grow to the size of a Herring. Ed.

how they subsisted, had not Providence supplied them with innumerable *larvæ* of the *Gnat* kind : * these are food to the fishes, who in their turn are a support to the migratory *Laplanders* in their summer voyages to the distant lakes. In such excursions those vacant people find a luxurious and ready repast in these fishes, which they dress and eat without the addition † of sauces ; for exercise and temperance render useless the inventions of epicurism.

There are but few lakes in our island that produce this fish, and even those not in any abundance. It is found in *Winander Mere* in *Westmoreland* ; in *Llyn Cawellyn*, near the foot of *Snowdon* ; and before the discovery of the

* A pupil of *Linnæus* remarks in the fourth volume of the *Amæn. Acad.* p. 156, that the same insects which are such a pest to the rein deer, afford sustenance to the fishes of the vast lakes and rivers of *Lapland*. But at the same time that we wonder at *Linnæus*'s inattention to the food of the birds and fishes of that country, which abound even to a noxious degree, we must, in justice to that Gentleman, acknowledge an oversight of our own in the second volume of the *British Zoology*, p. 522, edition the second, where we give the *Lapland* waters only one species of water plant ; for on a more careful review of that elaborate performance, the *Flora Lapponica*, we discover three other species, viz. *Scirpus*, No. 18, *Alopecurus*, No. 38, *Ranunculus*, No. 234 ; but those so thinly scattered over the *Lapland* lakes, as still to vindicate our assertion, as to the scarceness of plants in the waters of alpine countries.

† *Arted. Sp. pisc.* 52.

copper-mines, in those of *Llynberis*, but the mineral streams have entirely destroyed the fish in the last lakes.* Mr. *Walker* to whom I have been so often indebted, tells me, that he is informed by Doctor *Vyse*, an eminent physician and botanist at *Limerick*, that the Charr is found in the lake of *Inchigeelah* in the county of *Cork*, and in one or two other small lakes in the neighborhood. In *Scotland* it is found in *Loch Inch*, and other neighboring lakes, and is said to go into the *Spey* to spawn.

The largest and most beautiful we ever received were taken in *Winander Mere*, and were communicated to us by the Rev. Mr. *Farrish* of *Carlisle*, with an account of their natural history. He favored me with five specimens, two under the name of the *Case Charr*, male and female; another he called the *Gelt Charr*, i. e. a charr which had not spawned the preceding season, and on that account is reckoned to be in the greatest perfection. The two others were inscribed, the *Red Charr*, the *Silver or Gelt Charr*, the *Carpio Lacus BENACI, Raii syn. pisc. 66*, which last are in *Westmoreland* distinguished by the epithet *red*, by reason of the

* They are found in certain lakes in *Meirionethshire*.

flesh assuming a higher color than the other when dressed.

VARIETIES. On the closest examination, we could not discover any specific differences in these specimens, therefore must describe them as the same fish, subject only to a slight variation in their form, hereafter to be noted. But there is in another respect an essential difference, we mean in their œconomy, which is in all beings invariable; the particulars we shall deliver in the very words of our obliging informant.

SPAWNING
OF THE CASE
CHARR.

The *Umbla minor*, or case charr, spawns about *Michaelmas*, and chiefly in the river *Brathy*, which uniting with another called the *Rowthay*, about a quarter of a mile above the lake, they both fall into it together. The *Brathy* has a black rocky bottom; the bottom of the *Rowthay* is a bright sand, and into this the charr are never observed to enter. Some of them however spawn in the lake, but always in such parts of it which are stony, and resemble the channel of the *Brathy*. They are supposed to be in the highest perfection about *May*, and continue so all the summer, yet are rarely caught after *April*. When they are spawning in the river they will take a bait, but at no other time, being commonly taken, as well as the

other species, in what they call *breast nets*, which are in length about twenty-four fathoms, and about five, where broadest.

The season which the other species spawns in is from the beginning of *January* to the end of *March*. They are never known to ascend the rivers, but remain in those parts of the lake which are springy, where the bottom is smooth and sandy, and the water warmest. The fishermen judge of this warmth, by observing that the water seldom freezes in the places where they spawn, except in intense frosts, and then the ice is thinner than in other parts of the lake. They are taken in greatest plenty from the end of *September* to the end of *November*: at other times they are hardly to be met with. This species is much more esteemed for the table than the other, and is very delicate when potted.

OF THE
GELT
CHARR.

We must observe, that this account of the spawning season of the *Westmoreland* charrs, agrees very nearly with that of those of *Wales*, the last appearing about a month later, keep moving from side to side of the pool, and then retire into the deep water, where they are sometimes but rarely taken. This remarkable circumstance of the different season of spawning

in fish, apparently the same (for the red charr of *Winander*, is certainly not the *Carpio Lacus* BENACI) puzzles us greatly, and makes us wish that the curious, who border on that lake, would pay farther attention to the natural history of these fishes, and favor us with some further lights on the subject.

We shall now describe the varieties by the names ascribed to them in the north.

RED CHARR.

DESCRIP-
TION.

The length of the red charr to the division in its tail, was twelve inches; its biggest circumference almost seven. The first dorsal fin placed five inches and three quarters from the tip of its nose, consisted of twelve branched rays, the first of which was short, the fifth the longest; the adipose fin was very small.

Each of the five fish had double nostrils, and small teeth in the jaws, roof of the mouth, and on the tongue. The head, back, dorsal fin, and tail of each, were of a dusky blue; the sides rather paler, marked with numbers of bright red spots; the bellies of the *Red Charr* were of a full and rich red; those of the *Case Charr* rather paler; from this particular the *Welsh* call these fish *Torgoch*, or red belly. The first rays of the anal and ventral fins of each, were of a pure white; the rest of each fin on the

lower part of the body, tinged with red. The lateral line strait, dividing the fish into two equal parts, or nearly so.

The jaws of the *Case Charr* were perfectly even; on the contrary, those of the *Red Charr* were unequal, the upper jaw being the broadest, and the teeth hung over the lower, as might be perceived on passing the finger over them.

The branchiostegous rays were, on different sides of the same fish, unequal in number, viz. 12,-11, 11,-10, 10,-9, except in one, where they were 11,-11.

The *Gelt*, or *Barren Charr*, was rather more slender than the others, as being without spawn. The back of a glossy dusky blue; the sides silvery, mixed with blue, spotted with pale red; the sides of the belly were of a pale red, the bottom white.

GELT
CHARR.

The tails of each bifurcated.

The charrs we have seen, brought from *Snowdon* lakes, were rather smaller than those of *Westmoreland*, their colors paler. The supposed males very much resemble the *Gelt Charr*; but that is not a certain distinction of sex, for the Rev. Mr. *Farrington** has told me that the fishermen do not make that distinction.

* Who favored the Royal Society with a paper on the *Welsh* char. *Vide Phil. Trans.* 1755.

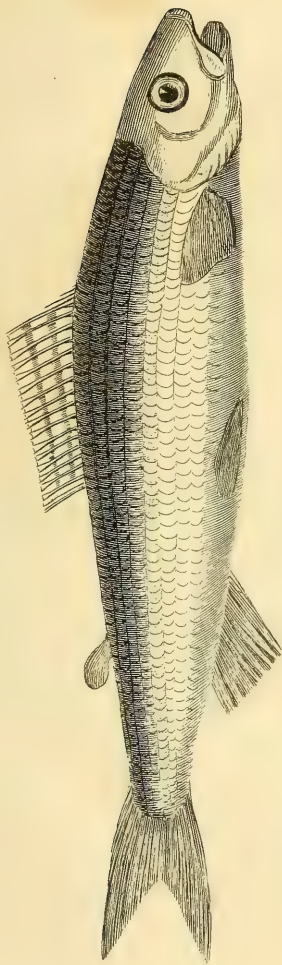
8. GRAY-
LING. *Θυμαλλος*. *Ælian. de an. lib.*
xiv. c. 22.
Umbra Ausonii Mosella. 90.
Thymalus, Thymus. Salvian.
81. *Belon*, 276.
Thymus, Umbra fluviatilis.
Rondel. fluv. 187, 172. *Ges-*
ner pisc. 132.
A Grayling, or UMBER. *Wil.*
Ichth. 187. *Raii syn. pisc.*
62. *Coregonus maxilla su-*
periore longiore, pinna dor-
si ossiculorum viginti trium.
Arted. synon. 20.
Salmo Thymallus. Lin. syst.
512. *Gm. Lin.* 1379. *Gro-*
nov. Zooph. No. 375.
Asch. Kram. 390.
L'Ombre D'Auvergne. Du-
hamel Tr. des Pesches, ii.
218. *tab. 3. fig. 2.*
L'Ombre d'Auvergne. Bloch
ichth. i. 128. *tab. 24.*
Le Coregone Thymalle. De la
Cepede Hist. des Poissons, v.
256.

THE grayling haunts clear and rapid streams, and particularly such as flow through mountainous countries. It is found in the rivers of *Derbyshire*; in some of those of the north; in the *Tame* near *Ludlow*; in the *Lug*, and other streams near *Leominster*; and in the river near *Christchurch, Hampshire*. It is also very common in *Lapland*; the inhabitants make use of the guts of this fish instead of rennet, to make the cheese which they get from the milk of the rein deer.*

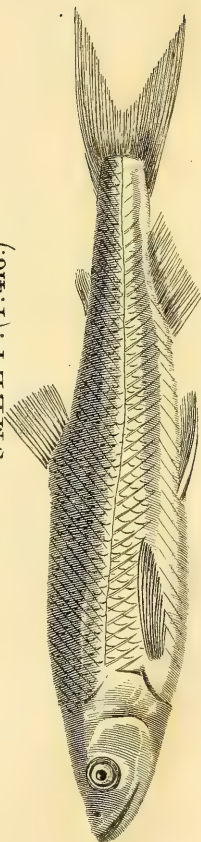
It is a voracious fish, rises freely to the fly, and will very eagerly take a bait; is a very

* *Flora Lap.* 109. *Amæn. Acad.* iv. 159.

GRAYLING. (P. 414.)



SMELT. (P. 416.)





swift swimmer, and disappears like the transient passage of a shadow, from whence we believe is derived the name of *Umbra*.

*Effugiensque oculos celeri levis UMBRA natatu.**

The *Umbra* swift escapes the quickest eye.

Thymalus and *Thymus*, are names bestowed on it on account of the imaginary scent, compared by some to that of thyme; but we never could perceive any particular smell.

It is a fish of an elegant form; less deep than the trout; the largest we ever heard of was taken near *Ludlow*, which was above half a yard long, and weighed four pounds six ounces, but this was a very rare instance. The irides are silvery, tinged with yellow; the teeth very minute, seated in the jaws and the roof of the mouth, but none on the tongue; the head is dusky; the covers of the gills of a glossy green; the back and sides of a fine silvery grey, but when the fish is just taken, varied slightly with blue and gold; the side-line is strait; the scales large, and the lower edges dusky, forming strait rows from head to tail. The first dorsal fin has twenty-one rays; the three or four first are the shortest, the others almost of equal lengths; this fin is spotted, all the others are plain; the tail is much forked.

DESCRIP-
TION.

* Ausonii Mosel. 90.

9. SMELT. Eperlan de mer. *Belon*, 282.
 Eperlanus. *Rondel. fluviat.*
 196. *Gesner pisc.* 362.
 Spirincus et Stincus. *Gesner.*
Paralip. 29.
 A Spyrling a Sprote. *Turner*
epist. ad Gesn.
 Stindt, et Stinckfisch. *Scho-*
nevelde, 70.
 A Smelt. *Wil. Ichth.* 202.
Raii Syn. pisc. 66.
 Osmerus radiis pinnæ ani sep-
 tendecim. *Arted. Synon.* 21.
 Salmo Eperlanus. S. capite
 diaphano, radiis pinnæ ani
 septendecim. *Lin. Syst.*
 511. *Gm. Lin.* 1375. *Gro-*
nov. Zooph. No. 49.
 Nors, Slom. *Faun. Suec.* No.
 350.
 L'Eperlan. *Duhamel Tr. des*
Pesches, ii. 229. *tab.* 4.
fig. 1.
 L'Eperlan de Mer. *Bloch*
ichth. i. 145. *tab.* 28. *f.* 1.
 L'Osmere eperlan. *De la Ce-*
pède Hist. des Poissons, v.
 231.

THE smelt* inhabits the seas of the northern parts of *Europe*, and we believe never is found as far south as the *Mediterranean*: the *Seine* is one of the *French* rivers which receives it, but whether it is found south of that, we have not at present authority to say. If we can depend on the observations of navigators, who generally have too much to think of to attend to the *minutiae* of natural history, these fish are taken in the straits of *Magellan*,† and of a most surprising size, some measuring twenty inches in length, and eight in circumference.

* *Bloch* considers this as a variety of the *Salmo eperlanus*, or *Eperlan*, which is an inhabitant of lakes. ED.

† *Narborough's Voy.* 123.

They inhabit the seas that wash these islands the whole year, and never go very remote from shore, except when they ascend the rivers. It is remarked in certain rivers that they appear a long time before they spawn, being taken in great abundance in *November*, *December*, and *January*, in the *Thames* and *Dee*, but in others not till *February*, and in *March* and *April* they spawn; after which* they all return to the salt water, and are not seen in the rivers till the next season. It has been observed, that they never come into the *Mersey* as long as there is any snow water in the river.

These fish vary greatly in size; the largest we ever saw was thirteen inches long, and weighed half a pound; but I have been informed by a gentleman resident near *Llanrwst*, that he had seen several taken in the adjacent river *Conwy* which weighed twelve ounces.

They have a very particular scent, from whence is derived one of their *English* names *Smelt*, i. e. smell it. That of *Sparling*, which is used in *Wales* and the north of *England*, is taken from the *French*, *Eperlan*. There is a wonderful disagreement in the opinion of people in respect to the scent of this fish; some assert

* In the river *Conwy*, near *Llanrwst*, and in the *Mersey* they never continue above three or four weeks.

it flavors of the violet; the *Germans*, for a very different reason, distinguish it by the elegant title of *Stinckfisch*.*

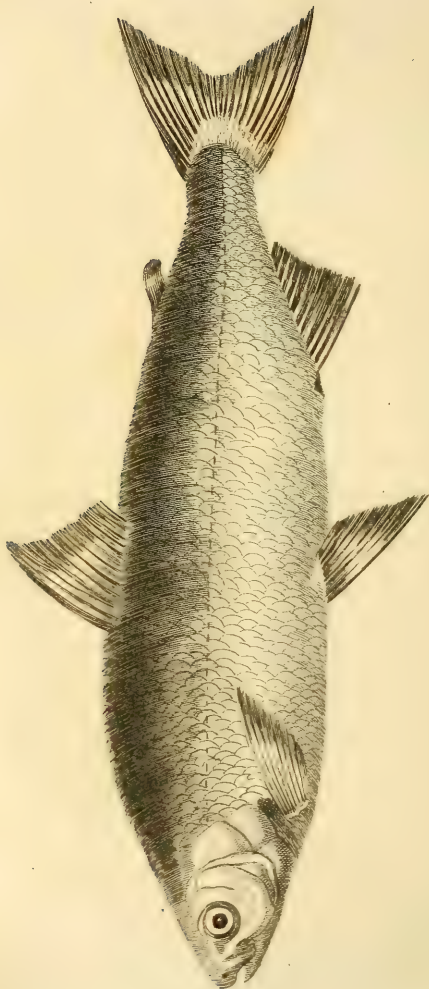
Smelts are often sold in the streets of *London* split and dried. They are called dried *Sparlings*, and are recommended as a relish to a glass of wine in the morning.

DESCRIP-
TION.

It is a fish of a very beautiful form and color; the head is transparent, and the skin in general so thin, that with a good microscope the blood may be observed to circulate. The irides are silvery; the pupil of a full black; the under jaw is the longer; in the front of the upper jaw are four large teeth; those in the sides of both are small; in the roof of the mouth are two rows of teeth; on the tongue two others of large teeth. The first dorsal fin has eleven rays; the pectoral fins the same number; the ventral eight; the anal fourteen. The scales are small, and readily drop off; the tail consists of nineteen rays, and is forked. The color of the back is whitish, with a cast of green, beneath which it is varied

* And not without reason, if we may depend on *Linnaeus*, who says there are in the *Baltic* two varieties, the one, which is called *Nors*, *fætidissimus*, *stercoris instar*, which in the early spring, when the peasants come to buy it, fills all the streets of *Upsal* with the smell. He adds, that at this season agues reign there. *Faun. Suec. p. 125.*

GWINIAD.



J. W. Edwards del.

with blue, and then succeeds a beautiful gloss of a silvery hue.

** Without Teeth.

Le Lavaret. *Belon*, 278.

Lavaretus; Piscis *Lemani* lacus *Bezola* vulgo nuncupatus. Alius Piscis proprius *Lemani* lacus. *Rondel. fluviat.* 162, 163, 164. *Gesner pisc.* 29, 30, 31.

Albula nobilis, Snepel, Helte? *Schonevelde*, 12.

Vandesius et Gevandesius. *Sib. Scot.* 26.

Guiniad *Wallis*: piscis lacus *Balensis*, *Ferræ*, (ut puto) idem. *Wil. Ichth.* 183. *Raii syn. pisc.* 61.

Lavaretus *Allobrogum*, Schelley *Cumberlandis*. *Wil. Ichth.* 183. *Raii Syn. pisc.* 61.

Albula cærulea. *Scheuchzer it. Alp.* ii. 481.

Coregonus maxilla superiore longiore plana, pinna dorsi ossiculorum 14. *Arted. synon.* 19.

Salmo Lavaretus. *Lin. syst.* 512. *Gm. Lin.* 1376.

Sijk, *Stor-sijk*. *Faun. Suec. No.* 352.

Gwiniad. *Phil. Trans.* 1767. 211.

Adelfisch, *Gangfisch*, *Weissfisch*, *Weisser Blauling*, *Schnapel*. *Wulff Boruss.* 37. *Reinankl. Kram.* 389.

Le Lavaret. *Duhamel Tr. des Pesches.* ii. 233.

Le Lavaret. *Bloch Ichth.* i. 132. *tab.* 25.

Le *Coregone* Lavaret. *De la Cepede Hist. des Poissons.* v. 245.

10. GWYNIAD.

THIS fish is an inhabitant of several of the lakes of the *Alpine* parts of *Europe*. It is found in those of *Switzerland*, *Savoy*, and *Italy*;

of *Norway*, *Sweden*, *Lapland*,* and *Scotland*; in those of *Ireland*, and of *Cumberland*; and in *Wales*, in that of *Llyntegid*, near *Bala*, in *Meirionethshire*.

It is the same with the *Ferra* of the lake of *Geneva*, the *Schelly*† of *Uls-water*, the *Pollen* of *Lough Neagh*, and the *Vangis* and *Juvangis* of *Loch Mabon*. The *Scotch* have a tradition that it was first introduced there by their beautiful queen, the unhappy *Mary Stuart*; and as, in her time, the *Scotch* court was much frenchified, it seems likely that the name was derived from the *French*, *vendoise*, a dace; to which a slight observer might be tempted to compare it from the whiteness of its scales.

* *Schæffer*, in his history of *Lapland*, p. 140, says, that these fishes are caught there of the weight of ten or twelve pounds. We wish *Linnæus* had executed his intention of favoring the world with his *Lachesis Lapponica*, in which he promised a complete history of that country. I once reminded him of it, and it is with true regret, that I give his answer: *Nunc nimis serò inciperem*,

*Me quoque debilitat series immensa laborum,
Ante meum tempus cogor et esse senem :
Firma sit illa licet solvetur in æquore navis,
Quæ nunquam liquidis sicca carebit aquis.*

† The inhabitants of *Cumberland* give this name also to the chub, from its being a scaly fish.

The *British* name *Gwiniad*, or whiting, was bestowed on it for the same reason.

It is a gregarious fish, and approaches the shores in vast shoals in spring and in summer, which prove in many places a blessed relief to the poor of inland countries, in the same degree as the annual return of the herring is to those who inhabit the coasts. The Rev. Mr. *Farrish* of *Carlisle*, wrote me word, that he was assured by an *Uls-water* fisherman, that last summer he took between seven and eight thousand at one draught. I must not pass by that gentleman without acknowledging my obligations to him for an account of the Charrs and the *Schelly*; he being one of the valuable embellishers of this work, for whom I am indebted to the friendship of his late worthy prelate.*

The Gwyniad is a fish of an insipid taste, and must be eaten soon, for it will not keep long; those who choose to preserve them do it with salt. They die very soon after they are taken. Their spawning season in *Llyntegid* is in *December*.

It has long ago been observed in *Camden*,† that these fish never wander into the *Dee*, or the salmon ever ventures into the lake: this must be allowed to be generally the case; but

* *Lyttelton*, bishop of *Carlisle*. ED.

† *Vol.* ii. 790.

by accident the first have been known to stray as far as *Llandrillo*, six miles down the river, and a salmon has now and then been found trespassing in the lake.*

The largest Gwyniad we ever heard of weighed between three and four pounds: we have a *Ferra* we brought with us out of *Switzerland*, that is fifteen inches long; but these are uncommon sizes: the fish which we describe was eleven inches long, its greatest depth three.

DESCRIP-
TION.

The head is small, smooth, and of a dusky hue; the eyes very large; the pupil of a deep blue; the nose blunt at the end; the jaws of equal length; the mouth small and toothless; the branchiostegous rays nine; the covers of the gills silvery, powdered with black; the back is a little arched, and slightly carinated; the color, as far as the lateral line, glossed with deep blue and purple, but towards the lines assumes a silvery cast, tinged with gold, beneath which those colors entirely prevale; the side line is quite strait, and consists of a series of distinct spots of a dusky hue; the belly is a little prominent, and quite flat on the bottom. The first dorsal fin is placed almost in the middle, and consists of fourteen branched rays;

* *Hon. D. Barrington's Letter to Dr. Watson. Phil. Trans. 1767.*

the second is thin, transparent, and not distant from the tail; the pectoral fins have eighteen rays, the first the longest, the others gradually shortening; the ventral fins are composed of twelve, and the anal of fifteen, all branched at their ends; the ventral fins in some are of a fine sky blue, in others as if powdered with blue specks; the ends of the other lower fins are tinged with the same color; the tail is very much forked; the scales large, and adhere close to the body.*

* *De la Cepede* in the Supplement to his *Histoire des Poissons*, v. 696, gives a slight description of two supposed species of Salmon discovered by *le citoyen Noel*, and which he asserts are unknown to *British* ichthyologists.

One found in *Loch Lomond*, he has, from its resemblance to an herring, for which it has been taken, denominated *le Coregone clupeioides*. Its head is small, convex above, devoid of smaller scales, but distinguished by a few larger, or plates: it grows to the length of sixteen inches.

The other, *le Salmone Cumberland*, inhabits the lakes of *Cumberland* and *Scotland*. The head is described as small, the eyes large, and placed near the nose; the mouth large and furnished with two rows of teeth on the tongue; the scales small; the lateral line straight; the adipose fin long; the general color white, the back grey; the flesh pale and tasteless. ED.

GENUS XLII. PIKE.

JAW upper shorter than the lower.

BODY long, slender, compressed sideways.

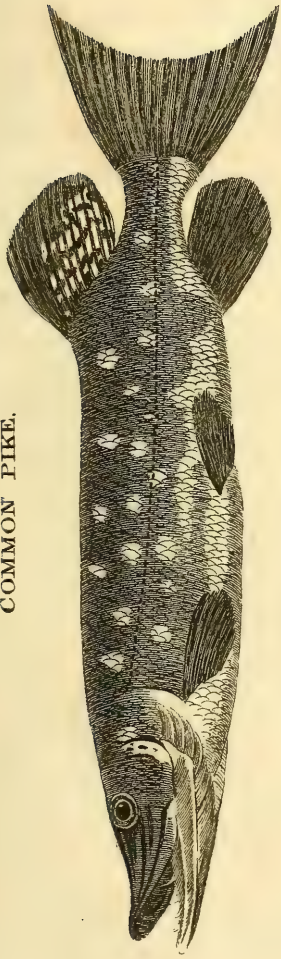
FIN one dorsal placed near the tail.

- | | | |
|------------|--|---|
| 1. COMMON. | Lucius. <i>Ausonii Mosella</i> , 122. | Gm. <i>Lin.</i> 1390. <i>Gronov.</i> |
| | Luccio. <i>Salvian.</i> 94. | <i>Zooph.</i> No. 361. |
| | Le Brochet. <i>Belon</i> , 292. <i>Itin.</i> | Gjadda. <i>Faun. Suec.</i> No. 355. |
| | 104. | Hecht. <i>Kram.</i> 388. |
| | Lucius. <i>Rondel. fluviat.</i> 188. | Le Brochet. <i>Duhamel Tr. des</i> |
| | <i>Gesner pisc.</i> 500. | <i>Pesches</i> , ii. 522. <i>sect.</i> 3. |
| | Heket, Hecht. <i>Schonevelde</i> , | <i>tab.</i> 27. <i>fig.</i> 6. |
| | 44. | Le Brochet. <i>Bloch Ichth.</i> i. |
| | Pike, or Pickerel. <i>Wil. Ichth.</i> | 183. <i>tab.</i> 32. |
| | 236. <i>Raii syn. pisc.</i> 112. | L'Esoce Brochet. <i>De la Ce-</i> |
| | Esox rostro plagioplateo. <i>Art.</i> | <i>pede Hist. des Poissons</i> , v. |
| | <i>synon.</i> 26. | 297. |
| | Esox Lucius. <i>Lin. syst.</i> 516. | • |

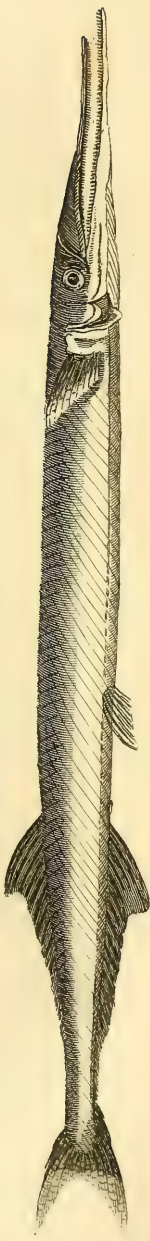
THE pike is common in most of the lakes of *Europe*, but the largest are those taken in *Lapland*, which, according to *Schæffer*, are sometimes eight feet long; they are taken there in great abundance, dried, and exported for sale. The largest fish of this kind which we ever heard of in *England*, weighed thirty-five pounds.

According to the common saying, these fish

COMMON PIKE.



GAR PIKE.



were introduced into *England* in the reign of *Henry VIII.* in 1537. They were so rare, that a pike was sold for double the price of a house-lamb in *February*, and a pickerel for more than a fat capon. How far this may be depended on, I cannot say, for this fish is mentioned in the *Boke of St. Albons*, printed in the year 1496, and is not there spoken of as a scarce fish, as was then the case with respect to the carp. Great numbers of pike were dressed in the year 1466, at the great feast given by *George Nevil*, Archbishop of *York*.*

All writers who treat of this species bring instances of its vast voraciousness. We have known one that was choaked by attempting to swallow another of its own species that proved too large a morsel; yet its jaws are very loosely connected, and have on each side an additional bone like the jaw of a viper, which renders them capable of greater distension when it swallows its prey. It does not confine itself to feed on fish and frogs; it will devour the water rat, and draw down the young ducks as they are swimming about. In a manuscript note, p. 244, of a copy of *Plot's History of Stafford-*

* “Pikes” are mentioned in an act of the sixth year of the reign of *Richard II.* cap. xi. which relates to the forestalling of fish. Ed.

shire, in my possession, is the following extraordinary fact: “ At Lord *Gower’s* canal at “ *Trentham*, a pike seized the head of a swan “ as she was feeding under water, and gorged “ so much of it as killed them both. The “ servants perceiving the swan with its head “ under water for a longer time than usual, “ took the boat, and found both swan and pike “ dead.”*

But there are instances of its fierceness still more surprizing, and which, indeed, border a little on the marvellous. *Gesner*† relates, that a famished pike in the *Rhone* seized on the lips of a mule that was brought to water, and that the beast drew the fish out before it could disengage itself. People have been bit by these voracious creatures while they were washing their legs; and they will even contend with the otter for its prey, and endeavour to force it out of its mouth.‡

Small fishes shew the same uneasiness and detestation at the presence of this tyrant, as the little birds do at the sight of the hawk or owl. When the pike lies dormant near the surface (as

* This note, I afterwards discovered, was written by Mr. *Plot*, of *Oxford*, who assured me he inserted it on good authority.

† *Gesner pisc.* 503.

‡ *Walton.* 157.

is frequently the case) the lesser fishes are often observed to swim around it in vast numbers, and in great anxiety. Pike are often haltered in a noose, and taken while they lie thus asleep in the ditches near the *Thames* in the month of *May*.

In the shallow water of the *Lincolnshire* fens they are frequently taken in a manner peculiar, we believe, to that county, and the isle of *Ceylon*.* The fisherman makes use of what is called a crown-net, which is no more than a hemispherical basket, open at the top and bottom. He stands at the end of one of the little fen-boats, and frequently puts his basket down to the bottom of the water, then poking a stick into it, discovers whether he has any booty by the striking of the fish; and vast numbers of pike are taken in this manner.

The longevity of this fish is very remarkable, LONGEVITY. if we may credit the accounts given of it. *Rzaczynski*† tells us of one that was ninety years old; but *Gesner*‡ relates, that in the year 1497, a pike was taken near *Hailbrun*, in *Sua-bia*, with a brazen ring affixed to it, on which were these words in *Greek* characters: *I am the fish which was first of all put into this lake*

* *Knox's Hist. Ceylon*, 28. † *Hist. Nat. Polonice*. 152.

‡ *Icones piscium*, 316, where a print of the ring is given.

by the hands of the governor of the universe, FREDERICK the Second, the 5th of October 1230: so that the former must have been an infant to this Methusalem of a fish.

Pikes spawn in *March* or *April*, according to the coldness or warmth of the weather. When they are in high season their colors are very fine, being green, spotted with bright yellow; and the gills are of a most vivid and full red. When out of season, the green changes to grey, and the yellow spots turn pale.

DESCRIP-
TION.

The head is very flat; the upper jaw broad, and shorter than the lower; the under jaw turns up a little at the end, and is marked with minute punctures; the teeth are very sharp, disposed not only in the front of the upper jaw, but in both sides of the lower, in the roof of the mouth, and often on the tongue; the slit of the mouth, or the gape, is very wide; the eyes small. The dorsal fin is placed very low on the back, and consists of twenty-one rays; the pectoral of fifteen; the ventral of eleven; the anal of eighteen; the tail is bifurcated.

Βελόνη. <i>Arist. Hist. an.</i> ii. c. 15. &c.	<i>Esox</i> rostro cuspidato gracili subtereti, et spithamali. <i>Ar-</i>	2. GAR.
Βελόνη, Ραφίς? <i>Athenæus lib.</i> vii. 319.	<i>ted. synonym.</i> 27.	
Acus, sive Belone. <i>Plin. lib.</i> ix. c. 51.	<i>Esox</i> Belone. E. rostro utra-	
Acuchia. <i>Salvian</i> , 68.	que maxilla dentata. <i>Lin.</i>	
L'Éguille, ou Orphie. <i>Belon</i> , 161.	<i>syst.</i> 517. <i>Gm. Lin.</i> 1391.	
Acus prima species. <i>Rondel.</i> 227. <i>Gesner pisc.</i> 9.	<i>Gronov. Zooph.</i> No. 362.	
Horn-fisck. <i>Schonevelde</i> , 11.	Nabbgjadda, Horngjall. <i>Faun.</i>	
Horn-fish, or Gar-fish. <i>Wil.</i> <i>Ichth.</i> 231. <i>Raii Syn. pisc.</i> 109.	<i>Suec.</i> No. 156.	
	L'Orphie. <i>Bloch ichth.</i> i. 189.	
	<i>tab.</i> 33.	
	L'Esoce Belone. <i>De la Ce-</i>	
	<i>pede Hist. des Poissons.</i> v. 308.	

THIS fish which is found in many places, is known by the name of the *Sea Needle*. It comes in shoals on our coasts in the beginning of summer, and precedes the mackrel: it has a resemblance to it in taste, but the light green, which stains the back-bone of this fish when boiled, gives many people a disgust to it.

The common gar pike, or sea needle, sometimes grows to the length of three feet, or more. The jaws are very long, slender, and sharp pointed; the under extends much farther than the upper, and the edges of both are armed with numerous short slender teeth; the inside of the mouth is purple; the tongue small; the eyes

DESCRIP-
TION.

large; the irides silvery; the nostrils wide and round; the body is slender; the belly quite flat, bounded on both sides by a rough line; the pectoral fins consist of fourteen rays; the ventral fin, small and placed very remote from the head, consists of seven rays, the first spiny; the dorsal fin lies on the very lowest part of the back, and consists of sixteen rays; the first are high, the others lower as they approach the tail; the anal fin is of the same form, and placed opposite to the other, and has twenty-one rays; the tail is much forked. The colors are extremely beautiful when the fish is in the water; the back of a fine green; beneath that appears a rich changeable blue and purple; the sides and belly are of a fine silvery hue.

3. SAURY. Saurus. *Rondel. pisc.* 232.

Syn. pisc. 169.

Gesner pisc. iv. 468.

The Saury. *Tour Scotland*

Racket in Lin. Tr. vii. 60.

1769.

tab. 5.

Neill in Mem. Wern. Soc.

Skipper, Cornubiensium. Raii

541.

DESCRIP-
TION.

THE length is from eleven to eighteen inches; the nose slender; the jaws produced like those of the gar pike, but of equal length; the mandibles a little incurvated upwards, like the bill of the Avoset. The eyes are large; the

SAURY PIKE

VOL. 3. P. 430.



Saury pike

body anguilliform; but towards the tail grows suddenly smaller, and tapers to a very inconsiderable girth. On the lower part of the back is a small fin, and between it and the tail five or six spurious, like those of the mackrel; correspondent to these, below, are the anal fin and six spurious;* the pectoral and ventral fins very small; the tail much forked. The back azure blue varying to green; the belly bright and silvery.

Great numbers of these fish were thrown ashore on the sands of *Leith*, near *Edinburgh*, after a great storm in *November 1768*.† *Rondeletius* describes this species among the fish of the *Mediterranean*; but speaks of it as a rare kind.

* The number of these spurious or lesser fins are said to vary.
ED.

† The Saury Pike enters the *Frith of Forth* almost every autumn in considerable shoals, and being stupid inactive fishes, are found by hundreds on the shallows, when the tide retires, with their long noses embedded in the mud. The specimen figured by Mr. *Racket* was taken near the isle of *Portland*. Another, with the lower jaw longer than the upper, was caught near *Blakeney* in *Norfolk* in 1803. ED.

GENUS XLIII. ARGENTINE.

TEETH in the jaws and tongue.

RAYS branchiostegous eight.

VENT near the tail.

FINS ventral composed of many rays.

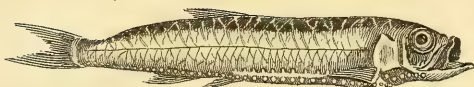
1. SHEPPY. *Sphyræna parva*, sive *sphyrænæ* secunda species. *Rondel.* 227. *Gesner pisc.* 883? *Argentina Sphyræna.* *Lin. Syst.* 518. *Gm. Lin.* 1394. *Gronov. Zooph.* No. 349?
Pisciculus Romæ, Argentina dictus. *Wil. Ichth.* 229. *L'Argentine Sphyrene.* *De la Cèpede Hist. des Poissons,* v. 366.
Raii Syn. pisc. 108? *Argentina.* *Arted. Synon.* 17.

A LITTLE fish, which I believe to be of this species, was brought to me in 1769, taken in the sea near *Downing*.

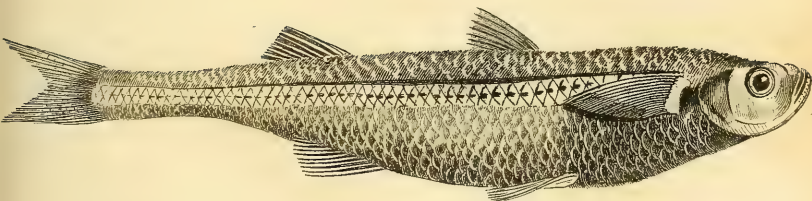
DESCRIP-
TION.

The length was two inches one-fourth; the eyes large; the irides silvery; the lower jaw sloped much; the teeth small; the body compressed, and of an equal depth almost to the anal fin; the tail forked; the back was of a dusky green; the sides and covers of the gills as if plated with silver; the lateral line was in the middle and quite strait; on each side of the

ARGENTINE



ATHERINE (P. 434.)



belly was a row of circular punctures ; above them another, which ceased near the vent.

Mr. *Willughby* says, that the outside of the air bladder of this fish consists of a foliaceous silvery skin, which was made use of in the manufacture of artificial pearl.

GENUS XLIV. ATHERINE.

JAW upper a little flat.

RAYS branchiostegous four.

STRIPE a silvery along the side.

1. EURO-
PÆAN.Epsetus? *Belon*, 209.Εψητος, *Atherina*. *Rondel.*215, 216. *Bossuet Epig.*66, 67. *Gesner pisc.* 71, 72.*Pisciculus Anguella Venetiis*dictus; forte *Hepsetus Ron-*deletii, vel *Atherina* ejus-dem. *Wil. Ichth.* 209. *Raii**syn. pisc.* 79.*Atherina. Arted. Synon. App.*

116.

Atherina Hepsetus. A. pinna-

ani radiis fere duodecim.

Lin. Syst. 519. *Gm. Lin.*1396. *Gronov. Zooph. No.*

399.

Le Joel. Bloch ichth. xi. 124.

tab. 393. f. 3.

*L'Atherine Joel. De la Copee**Hist. des Poissons*, v. 372.

THIS species is very common in the sea near *Southampton*, where it is called a *Smelt*. The highest season for it is from *March* to the latter end of *May*, or beginning of *June*; in which month it spawns. It never deserts the place, and is constantly taken, except in hard frost. It is also found on the other coasts of our island.

DESCRIP-
TION.

The length is above four inches one-fourth; the back strait; the belly a little protuberant;

on the back are two fins ; I neglected to count the rays.* The tail is much forked.

The fish is semipellucid, covered with scales ; the color silvery, tinged with yellow ; the side line strait ; beneath it is a row of small black spots.

* According to the reverend *Hugh Davies*, the number of rays in the first dorsal fin, are seven, in the second, eleven ; in the pectoral fin, twelve ; in the ventral, six ; and in the anal, twelve. ED.

GENUS XLV. MULLET.

BODY and covers of the gills clothed with large scales.

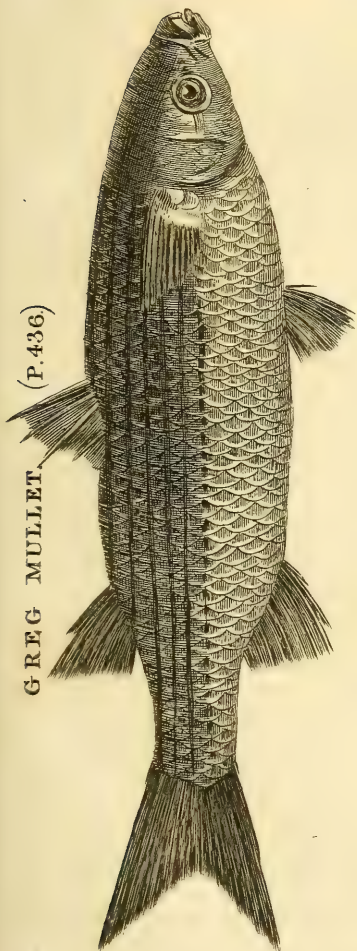
RAYs branchiostegous six incurvated.

TEETH on the tongue and in the palate only.

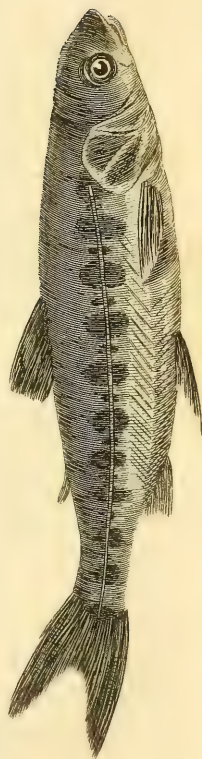
- | | |
|---|--|
| <p>1. GREY. Κεφαλος, Κεστρέυς. <i>Arist. Hist. an. lib. v. c. 11, &c.</i>
 Κεστρέυς. <i>Oppian. Halieut. iii. 98. Athenæus, lib. vii. 306.</i>
 <i>Mugil Ovid. Halieut. 37. Plinii lib. ix. c. 8. 17.</i>
 <i>Cephalo. Salvian, 75.</i>
 <i>Le Mulet. Belon, 205.</i>
 <i>Cephalus. Rondel. 260. Gesner pisc. 549.</i>
 <i>Mullet. Will. Ichth. 274. Raii syn. pisc. 84.</i>
 <i>Mugil. Arted. Synon. 52.</i></p> | <p><i>Mugil Cephalus. M. pinna dorsali anteriore quinque radiata. Lin. Syst. 520. Gm. Lin. 1397. Gronov. Zooph. No. 397.</i>
 <i>Le Mulet. Duhamel Tr. des Pesches, iii. 143. sect. 6. tab. 2. fig. 3.</i>
 <i>Le Mulet. Bloch ichth. xi. 129. tab. 394.</i>
 <i>Le Muge cephalo. De la Cépède Hist. des Poissons, iii. 386.</i></p> |
|---|--|

THE mullet is justly ranked by *Aristotle* among the *Pisces Littorales*, or those that prefer the shores to the full sea: they are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They

GREG MULLET
(P. 436)



PARR SAMLET (P. 406)



come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning, and when surrounded with a net, the whole shoal frequently escapes by leaping over it, for when one takes the lead, the others are sure to follow : this circumstance is taken notice of by *Orpian* ; whether the latter part of his observation is true, is what we are uncertain.

Κεστρευσ μεν πλεκλῆσιν ἐν ἀγκοίνῃσι λίνοιο,
 Ελκόμενος δόλον ουτι περιδρομον ἡγνοίησεν.
 Ὑψι δ' ἀναθρώσκει λελιγμένος ὕδατος ἄκρου,
 Ορθὸς ἄνω σπένδων ὅσσον σθένος ἄλματι κούρω
 Ορμηῆσαι· βούλῃς δὲ σαόφρονος οὐκ ἐμάτησε.
 Πολλάκι γὰρ ῥιπῇσι καὶ ὕστατα πείσματα φελλῶν
 Ρηιδίως ὑπερᾶλτο, καὶ ἐξήλυξε μόροιο.
 Εἰ δ' ὄγ' ἀνορμηθεὶς πρῶτον στόλον, αὖτις ὀλισθῇ
 Ες βρόχον, οὐκ ἔτ' ἔπειτα βιάζεται, οὐδ' ἀνορούει,
 Αχνύμενος· πείρῃ δὲ μαθὼν ἀποπαύεται ὀρμῆς.

The *Mullet*, * when encircling seines inclose,
 The fatal threads and treach'rous bosom knows.
 Instant he rallies all his vig'rous powers,
 And faithful aid of every nerve implores ;
 O'er battlements of cork up-darted flies,
 And finds from air th' escape that sea denies.
 But should the first attempt his hopes deceive,
 And fatal space th' imprison'd fall receive,
 Exhausted strength no second leap supplies ;
 Self-doom'd to death the prostrate victim lies,
 Resign'd with painful expectation waits,
 'Till thinner elements compleat his fates. JONES.

* Mr. Jones, by mistake, translates it the *Barbel*.

Oppian had a good opportunity of examining these fishes, for they swarm during some seasons on the coasts of the *Mediterranean*. Near *Martigues*, in the south of *France*, abundance of mullets are taken in wears made of reeds placed in the shallows. Of the milts of the males, which are there called *Alletants*, and of the roes of the females, which are called *Botar*, is made *Botargo*. The materials are taken out entire, covered with salt for four or five hours, then pressed a little between two boards or stones, washed, and at last dried in the sun for thirteen or fourteen days.*

This fish was sometimes made the instrument of a horrible punishment for unfortunate gallants. It was in use both at *Athens*† and at *Rome*; but we doubt much whether it was a legal one: for we rather suspect it was inflicted instantaneously by the injured and enraged husband, at a season when

————— *Furor arma ministrat.*

Juvenal seems to speak of it in that light as well as *Horace*: the former, relating the revenge

* Mr. *Willughby's* notes during his travels. *Vide Harris's Col. Voy.* ii. 721.

† *Legibus Atheniensium adulteri εν ἔργῳ deprehensi pœna fuit ῥαφανόδωσις. Raphani loco utebantur nonnunquam mugile pisce, interdum scorpione. Causauboni animadvers. in Athenæum, lib. i.*

taken by the exasperated spouse, describes it as very various :

*Necât hic ferro, secât ille cruentis
Verberibus, quosdam mæchos et MUGILIS intrat.**

The passage in *Horace* seems not to have been attended to by the critics ; but when he mentions the distresses that the invader of another's bed underwent, he most certainly alludes to this penalty :

*Discinctâ tunicâ fugiendum est, ac pede nudo ;
Ne nummi pereant, aut PRGA, aut denique fama.†*

The mullet is an excellent fish for the table, but at present not a fashionable one.

The head is almost square, and is flat on the top ; the nose blunt ; lips thick ; it has no teeth, only in the upper lip is a small roughness ; between the eyes and the mouth is a hard *callus*. The pupil of the eye is black, encircled with a small silvery line ; the upper part of the iris is hazel, the lower silvery ; the form of the body is pretty thick, but the back not greatly elevated ; the scales are large and deciduous. The first dorsal fin is placed near the middle of the back, and consists of four strong spines ; the second of nine soft branching rays ; the pectoral has sixteen, the ventral six ; the first a strong

DESCRIP-
TION.

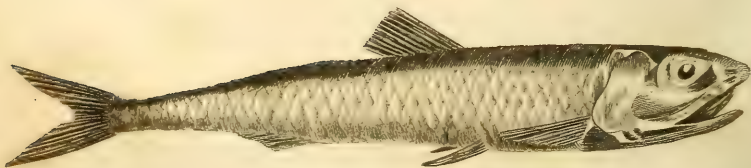
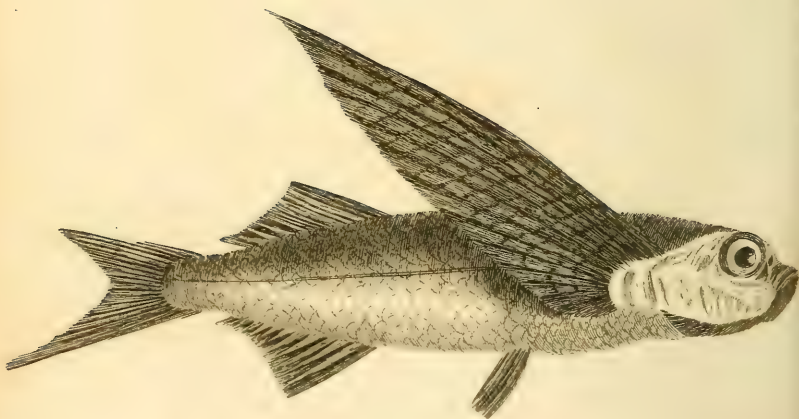
* *Satyr.* x. 316.

† *Satyr.* ii. lib. i. 132.

spine, the others soft; the tail is much forked. The color of the back is dusky, varied with blue and green; the sides silvery, marked with broad dusky parallel lines, reaching from head to tail; the belly is silvery.



FLYING FISH. (P. 441.)



ANCHOVY. (P. 459.)

GENUS XLVI. FLYING FISH.

HEAD covered with scales.

FINS pectoral almost as long as the body.

Hirundo. <i>Plinii lib.</i> ix. c. 26.	Exocætus. <i>Arted. Synon.</i> 18. 1. WINGED.
* Εξοκοιτος καὶ Ἀδωνις? <i>Athenæus lib.</i> viii. 332.	Exocætus volitans. E. abdomen utrinque carinato.
<i>Oppian. Halieut.</i> i. 157.	<i>Lin. Syst.</i> 520. <i>Gm. Lin.</i>
Χελιδων? <i>Oppian</i> ii. 459.	1399. <i>Amæn. Acad.</i> i. 603.
Rondine. <i>Salvian</i> , 186.	<i>Gronov. Zooph. No.</i> 359.
Hirondelle de mer. <i>Belon</i> , 189.	Le Poisson volant. <i>Bloch ichth.</i> xii. 9. <i>tab.</i> 348.
Mugil alatus. <i>Rondel.</i> 267.	L'Exocet volant. <i>De la Cepede Hist. des Poissons</i> , v. 402.
<i>Gesner pisc.</i> 553. <i>Wil. Ichth.</i> 233.	

WE can produce but a single instance of this species† being taken on the *British* coasts. In *June* 1765, one was caught at a small distance below *Caermarthen*, in the river *Towy*, being brought up by the tide which flows as far as the town. It is a fish frequent enough in the *Mediterranean*, and also in the ocean, where

* *Pliny* mentions it under the same name, *lib.* ix. c. 19.

† This fish was seen by *John Strange Esq.* at *Caermarthen*, who was so obliging as to communicate to me the account of it.

it leads a most miserable life. In its own element it is perpetually harassed by the *Dorados*, and other fishes of prey. If it endeavours to avoid them by having recourse to the air, it either meets its fate from the Gulls, or the Albatross, or is forced down again into the mouth of the inhabitants of water, who below keep pace with its aerial excursion. Neither is it unfrequent that whole shoals of them fall on board of ships that navigate the seas of warm climates : it is therefore apparent, that nature in this creature hath supplied it with instruments that frequently bring it into that destruction it strives to avoid, by having recourse to an element unnatural to it.

The antients were acquainted with this species : *Pliny* mentions it under the name of *Hirundo*, and speaks of its flying faculty. It is probable that *Oppian* intended the same by his *Ωκείαι χελιδόνες*, or the *swift swallow* fish. What *Athenæus* and the last cited author mean by the *Εξοκοιστος* and *Αδωνις*, is not so evident : they assert it quitted the water and slept on the rocks, from whence it tumbled with precipitation when disturbed by the unfriendly birds : on these accounts Ichthyologists seem to have made it synonymous with the flying fish.

It resembles the herring in form of the body, but the back is flat; the scales are large and silvery; the dorsal fin small, and placed near the tail; the pectoral fins, the instruments of flight, are almost as long as the body; the tail is bifurcated.

DESCRIP-
TION.

GENUS XLVII. HERRING.

RAYS branchiostegous eight.

BELLY extremely sharp, and often serrated.

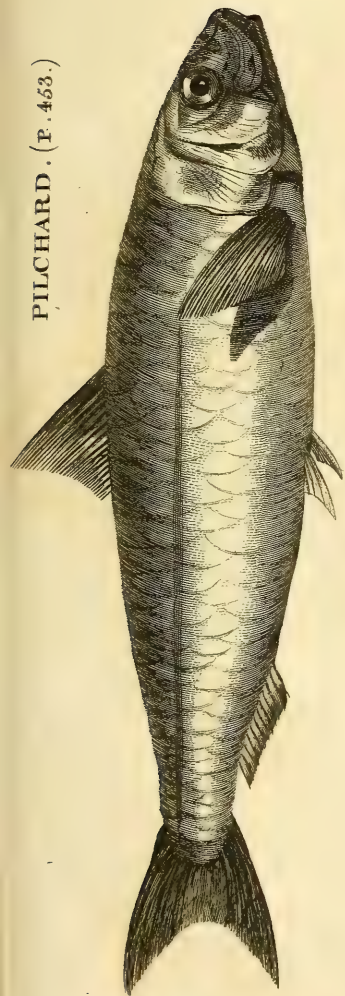
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|---|---|
| 1. COMMON. <i>Aringha ex cimbricis littoribus. Jovius, 143.</i> | <i>Lin. 1402. Gronov. Zooph. No. 348.</i> |
| Hareng, espece de Chalcis. <i>Belon, 169.</i> | <i>Sill. Faun. Suec. No. 357. α. Stromming. Faun. Suec. No. 357. β.</i> |
| Harengus. <i>Rondel. 222. Gesner pisc. 410.</i> | <i>Stromling.* Wulff. Boruss. No. 50.</i> |
| Heringk. <i>Schonevelde, 37.</i> | <i>L'Hareng. Duhamel Tr. des Pesches. ii. 335. sect. 3. tab. 4.</i> |
| Herring. <i>Wil. Ichth. 219. Raii syn. pisc. 103.</i> | <i>Le Hareng. Bloch ichth. i. 149. tab. 29.</i> |
| <i>Clupea maxilla inferiore longiore maculis carens. Arted. synon. 14. α. β.</i> | <i>Le Clupée Hareng. De la Cepede Hist. des Poissons, v. 427.</i> |
| <i>Clupea Harengus. Cl. immaculata, maxilla inferiore longiore. Lin. syst. 522. Gm.</i> | |

THE herring was unknown to the antients, notwithstanding the words *χαλκίς* and *μαίνις* are by translators rendered *Halec*:† the characters

* The herring of the *Baltic*, in all respects is like ours, but smaller.

† Which word, in spite of all *lexicographers*, never signified any thing but the *garum* or pickle.

PILCHARD. (P. 453.)



HERRING. (P. 444.)



G. Wilkinson del.

given of those fishes are common to such numbers of different species, as render it impossible to say which they intended.

Herrings are found from the highest northern latitudes yet known, as low as the northern coasts of *France*; and, excepting one instance brought by *Dod*,* of a few being once taken in the Bay of *Tangier*, are never found more southerly. They are met with in vast shoals on the coast of *America*, as low as *Carolina*. In *Chesapeake* Bay is an annual inundation of those fishes, which cover the shores in such quantities as to become a nuisance.† We find them again in the seas of *Kamtschatka*, and possibly they reach *Japan*; for *Kæmpfer* mentions, in his account of the fishes of that country, some that are congenerous. The great winter rendezvous of the herring is within the *Arctic* circle: there they continue for many months, in order to recruit themselves after the fatigue of spawning; the seas within that space swarming with insect food, in a degree far greater than in our warmer latitudes.

This mighty army begins to put itself in motion in the spring; we distinguish this vast body by that name, for the word herring is derived

MIGRA-
TIONS.

* *Natural Hist. of the Herring*, p. 27.

† *Catesby Carol.* ii. xxxiii.

from the *German, Heer*, an army, to express their numbers. They begin to appear off the *Shetland* isles in *April* and *May*; these are only forerunners of the grand shoal which comes in *June*, and their appearance is marked by certain signs, by the numbers of birds, such as gannets, and others, which follow to prey on them: but when the main body approaches, its breadth and its depth is such as to alter the appearance of the very ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for ten or fifteen minutes, then rise again to the surface, and in bright weather reflect a variety of splendid colors, like a field of the most precious gems, in which, or rather in a much more valuable light, should this stupendous gift of Providence be considered by the inhabitants of the *British* isles.

The first check this army meets with, in its march southward, is from the *Shetland* isles, which divide it into two parts; one wing takes to the east, the other to the western shores of *Great Britain*, and fill every bay and creek with their numbers; others proceed towards *Yarmouth*, the great and antient mart of her-

rings ; they then pass through the *British* channel, and after that in a manner disappear. Those which take to the west, after offering themselves to the *Hebrides*, where the great stationary fishery is, proceed towards the north of *Ireland*, where they meet with a second interruption, and are obliged to make a second division ; the one takes to the western side, and is scarcely perceived, being soon lost in the immensity of the *Atlantic* ; but the other, which passes into the *Irish* sea, rejoices and feeds the inhabitants of most of the coasts that border on it. These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not shew an invariable attachment to their haunts. We have had, in our time, instances of their entirely quitting the coasts of *Cardigan-shire*, and visiting those of *Caernarvonshire* and *Flintshire*, where they continued for a few years, but they have since quite deserted our sea, and returned to their old seats. The season of their appearance among us was very late, never before the latter end of *November* ; their continuance till *February*.

Were we inclined to consider this partial migration of the herring in a moral light, we might reflect with veneration and awe on the mighty

PROVIDENTIAL
INSTINCT.

Power which originally impressed on this most useful body of his creatures, the instinct that directs and points out the course, that blesses and enriches these islands, which causes them at certain and invariable times to quit the vast polar deeps, and offer themselves to our expecting fleets. That benevolent Being has never, from the earliest records, been once known to withdraw this blessing from the whole, though he often thinks proper to deny it to particulars; yet this partial failure (for which we see no natural reason) should fill us with the most exalted and grateful sense of his Providence, for impressing so invariable and general an instinct on these fishes towards a southward migration, when the whole is to be benefited, and to withdraw it only when a minute part is to suffer.

SPAWNING.

This instinct was given them, that they might remove for the sake of depositing their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frigid zone. It is not from defect of food that they set themselves in motion, for they come to us full of fat, and on their return are almost universally observed to be lean and miserable. What their

FOOD.

food is near the pole, we are not yet informed; but in our seas they feed much on the *Oniscus marinus*, a crustaceous insect, and sometimes

on their own fry. The herring will rise to a fly. Mr. *Low*, of *Birsa* in the *Orknies*, assures me, that he has caught many thousands with a common trout fly, in a deep hole in a rivulet, into which the tide flows. He commonly went at the fall of the tide. They were young fish, from six to eight inches in length.

They are in full roe the end of *June*, and continue in perfection till the beginning of winter, when they begin to deposit their spawn. The young herrings begin to approach the shores in *July* and *August*, and are then from half an inch to two inches long: those in *Yorkshire* are called *Herring Sile*.* Though we have no particular authority for it, yet as very few young herrings are found in our seas during winter, it seems most certain that they must return to their parental haunts beneath the ice, to repair the vast destruction of their race during summer, by men, fowl, and fish. Some of the old herrings continue on our coasts the whole year: the *Scarborough* fishermen never put down their nets but they catch a few; still the numbers that remain are not worthy of

RETURN.

* The *Suedes* and *Danes* call the old herring *Sill*; but the people of *Sleswick*, from whence the *Anglo-Saxons* came, call the fry *Sylen*.

mention in comparison to the numbers that return.

Herrings vary greatly in size. Mr. *Travis* communicated to me the information of an experienced fisherman, who informed him that there is sometimes taken near *Yarmouth*, a herring distinguished by a black spot above the nose; and that he once saw one that was twenty-one inches and an half long. He insisted that it was a different species, and varied as much from the common herring as that does from the pilchard. This we mention in order to incite some curious person on that coast to a farther enquiry.

DESCRIP-
TION.

The eye is very large; the edges of the upper jaw and the tongue very rough, but the whole mouth is void of teeth; the gill covers are very loose, and open very wide, which occasions the almost instant death of the herring when taken out of the water; a fact well known, even to a proverb. The dorsal fin consists of about seventeen rays, and is placed beyond the centre of gravity, so that when the fish is suspended by it, the head immediately dips down; the two ventral fins have nine rays; the pectoral seventeen; the anal fourteen; the tail is much forked; the lateral line is not apparent, unless the scales are taken off; the sides are

compressed; the belly sharply carinated, but the ridge quite smooth, and not in the least serrated; the scales are large, thin, and fall off with a slight touch. The color of the back and sides green, varied with blue; the belly silvery.

The herring fishery is of great antiquity: the FISHERY. industrious *Dutch* first engaged in it about the year 1164: they were in possession of it for several centuries, but at length its value became so justly known, that it gave rise to most obstinate and well-disputed wars between the *English* and them; but still their diligence and skill gives them a superiority over us in that branch of trade.

Our great stations are off the *Shetland* and *Western Isles*, and off the coast of *Norfolk*, in which the *Dutch* also share. *Yarmouth* has long been famous for its herring fair;* that town is obliged, by its charter, to send to the sheriffs of *Norwich*, one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of *East Carleton*, who is to convey them to the king.† The facetious Doctor *Fuller*‡ takes notice of the great repute

* This fair was regulated by an act, commonly called the *Statute of Herrings*, in the 31st year of *Edward III.*

† *Camden Britan.* i. 458.

§ *British Worthies*, 238.

the county of *Norfolk* was in for this fish, and, with his usual archness, calls a red herring, a *Norfolk Capon*.

In 1195, *Dunwich* in *Suffolk* accounted to the king for their yearly fee farm rent, 120*l.* 1 mark and 24000 herrings, 12000 for the monks of *Eye*, and 12000 for those of *Ely*.

The *Dutch* are most extravagantly fond of this fish when it is pickled. A premium is given to the first buss that arrives in *Holland* with a lading of this their *ambrosia*, and a vast price given for each keg. We have been in the country at that happy minute, and observed as much joy among the inhabitants on its arrival, as the *Egyptians* shew on the first overflowing of the *Nile*. *Flanders* had the honor of inventing the art of pickling herrings. One *William Beukelen*, of *Biervolet*, near *Sluys*, hit on this useful expedient; from him was derived the name *pickle*, which we borrow from the *Dutch* and *German*. *Beukelen* died in 1397. The emperor *Charles V.* held his memory in such veneration for the service he did mankind, as to do his tomb the honor of a visit. It is very singular that most nations give the name of their favourite dish to the facetious attendant on every mountebank. Thus the *Dutch* call him PICKLE HERRING; the *Italians*, MACARONI; the

French, JEAN POTAGE; the *Germans*, HANS * WURST; and we dignify him with the title of JACK PUDDING.

Pilchard. <i>Fuller's Brit. Worthies</i> , 194.	Clupea δ . <i>Arted. synon.</i> 16.	2. PIL- CHARD.
Peltzer. <i>Schonevelde</i> , 40.	Pilchard. <i>Borlase Cornwall</i> , 272.	
The Pilchard. <i>Wil. Ichth.</i> 223.	Le Pilchard. <i>Bloch Ichth.</i> xii. 32. <i>tab.</i> 406.	
<i>Raii Syn. pisc.</i> 104.		

THE pilchard appears in vast shoals off the *Cornish* coasts about the middle of *July*, disappearing the beginning of winter, yet sometimes a few return again after *Christmas*. Their winter retreat is the same with that of the herring, and their motives for migrating the same. They affect, during summer, a warmer latitude, for they are not found in any quantities on any of our coasts except those of *Cornwall*, that is to say, from *Fowey* harbor to the *Scilly* isles, between which places the shoals keep shifting for some weeks.

The approach of the pilchard is known by much the same signs as those that indicate the arrival of the herring. Persons, called in *Cornwall* *Huers*, are placed on the cliffs, to point to

* That is, *Jack Sausage*.

the boats stationed off the land the course of the fish. By the 1st of *James I.* c. 23, fishermen are empowered to go on the grounds of others to *hue*, without being liable to actions of trespass, which before occasioned frequent law-suits.

The emoluments that accrue to the inhabitants of that country are great, and are best expressed in the words of Doctor *W. Borlase*, in his account of the *Pilchard* fishery.

“ It employs a great number of men on the
“ sea, training them thereby to naval affairs;
“ employs men, women, and children, at land,
“ in salting, pressing, washing, and cleaning,
“ in making boats, nets, ropes, casks, and all
“ the trades depending on their construction
“ and sale. The poor is fed with the offals of
“ the captures, the land with the refuse of the
“ fish and salt, the merchant finds the gains of
“ commission and honest commerce, the fisher-
“ man the gains of the fish. Ships are often
“ freighted hither with salt, and into foreign
“ countries with the fish, carrying off at the
“ same time part of our tin. The usual pro-
“ duce of the number of hogsheads exported
“ each year, for ten years, from 1747 to 1756
“ inclusive, from the four ports of *Fowey*, *Fal-*
“ *mouth*, *Penzance*, and *St. Ives*, it appears

“ that *Fowey* has exported yearly 1732 hogs-
“ heads; *Falmouth*, 14631 hogsheads and two-
“ thirds; *Penzance* and *Mount's-Bay*, 12149
“ hogsheads and one-third; *St. Ives*, 1282
“ hogsheads: in all amounting to 29795 hogs-
“ heads. Every hogshead for ten years last
“ past, together with the bounty allowed for
“ each hogshead exported, and the oil made
“ out of each hogshead, has amounted, one year
“ with another at an average, to the price of
“ one pound thirteen shillings and three-pence;
“ so that the cash paid for pilchards exported
“ has, at a medium, annually amounted to the
“ sum of forty-nine thousand five hundred and
“ thirty-two pounds ten shillings.”

The number taken at one shooting out of the nets, is amazingly great. Dr. *Borlase* assured me, that on the 5th of *October*, 1767, there were at one time inclosed in *St. Ives's Bay* 7000 hogsheads, each hogshead containing 35000 fish, in all 245,000,000.

This fish has a general likeness to the her-
ring, but differs in some particulars very essen-
tially; we therefore describe it comparatively
with the other, having one of each species before
us, both of them of the same length, *viz.* nine
inches and an half.

DESCRIP-
TION.

The body of the pilchard is less compressed than that of the herring, being thicker and rounder; the nose is shorter in proportion, and turns up; the under jaw is shorter; the back is more elevated; the belly less sharp; the dorsal fin of the pilchard is placed exactly in the centre of gravity, so that when taken up by it, the body preserves an equilibrium, whereas that of the herring dips at the head; the dorsal fin of the pilchard we examined, being placed only three inches eight tenths from the tip of the nose; that of the herring four inches one tenth; the scales of the pilchard adhere very closely, whereas those of the herring very easily drop off.

The pilchard is in general less than the herring; the specimen we describe being a very large one; it is also fatter, or more full of oil.

- | | | |
|--|--|-----------|
| Spratti. <i>Wil. Ichth.</i> 221. <i>Raii</i> | Hwassbuk. <i>Faun. Suec.</i> No. 358. | 3. SPRAT. |
| <i>Syn. pisc.</i> 105. | | |
| Clupea quadriuncialis, maxilla
inferiore longiore, ventre
acutissimo. <i>Arted. synon.</i> | Le Sprat. <i>Duhamel Tr. des
Pesches</i> , ii. 471. <i>sect. 3.</i>
<i>tab. 16. fig. 2.</i> | |
| 17. | Le Sprat. <i>Bloch Ichth.</i> i. 165.
<i>tab. 29. f. 2.</i> | |
| Clupea Sprattus. Cl. pinna
dorsali radiis tredecim. <i>Lin.</i> | La Clupée sardine. <i>De la Ce-
pede Hist. des Poissons</i> , v.
444. | |
| <i>Syst.</i> 523. <i>Gm. Lin.</i> 1403. | | |

MR. *Willughby* and Mr. *Ray* were of opinion, that these fishes are the fry of the herring: we are induced to dissent from them, not only because on comparing a sprat and young herring of equal size, we discovered some specific differences, but likewise for another reason: the former visit our coasts, and continue with us in shoals innumerable, when the others in general have retired to the great northern deeps.

They come into the river *Thames*, below bridge, the beginning of *November*, and leave it in *March*, and are, during their season, a great relief to the poor of the capital. At *Gravesend* and at *Yarmouth*, they are cured like red herrings; they are sometimes pickled, and are little inferior in flavor to the Anchovy, but

the bones will not dissolve like those of the latter. Mr. *Forster* tells me, that in the *Baltic* they preserve them in the same manner, and call them *Breitling*, i. e. the little deep fish, as being deeper than the *Stromling*, or *Baltic* herring.

DESCRIP-
TION.

The sprat grows to about the length of five inches; the body is much deeper than that of a young herring of equal length; the back fin is placed more remote from the nose than that of the herring,* and we think had sixteen† rays. But one great distinction between this fish, the herring, and pilchard, is the belly; that of the two first being quite smooth, that of the last most strongly serrated. Another is, that the herring has fifty-six vertebræ; this only forty-eight.

* As a farther distinction, it may be observed, that if a straight line be dropped from the forepart of the dorsal fin, it will, in the herring, fall a little in front of the ventral fins, but in the sprat it will fall behind them. *Neill* in *Mem. Wern. Soc.* 545. ED.

† *Bloch* says seventeen. ED.

- Ἐγκραυλος? *Arist. Hist. an.* Clupea maxilla superiore lon- 4. ANCHOVY.
Lib. vi. c. 15. giore. *Arted. synon.* 17.
 Ἐγκρασίχολος? *Athenæus,* Clupea Encrasicolus. *Lin. syst.*
Lib. vii. c. 285. 523. *Gm. Lin.* 1405.
 L'Anchoy? *Belon,* 165. L'Anchois. *Bloch Ichth. i.*
170. tab. 30. f. 2.
 Encrasicolus? *Rondel.* 211. La Clupee anchois. *De la Ce-*
Gesner pisc. 68. *pede Hist. des Poissons.* v.
 Lycostomus, sehe mareneken? 455.
Schonevelde, 46. *tab. 5.*
 Anchovy. *Wil. Ichth.* 225.
Raii syn. pisc. 107.

THE true anchovies are taken in vast quantities in the *Mediterranean*, and are brought over here pickled. The great fishery is at *Gorgona*, a small isle west of *Leghorn*.

Mr. *Ray* discovered this species in the estuary of the *Dee* above a century ago.* Since that time no notice has been taken of it, till a few were taken near my house in 1769.

The length of the largest of these was six inches and an half: the body slender, but thicker in proportion than the herring; the eyes were large; the irides white, with a cast of yellow; the under jaw much shorter than the upper; the teeth small, a row in each jaw, and another on the middle of the tongue; the

DESCRIP-
TION.

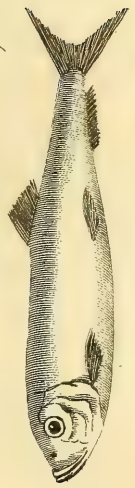
* *Ray's Letters*, 47.

tongue doubly ciliated on both sides; the dorsal fin consisted of twelve rays, was transparent, and placed nearer the nose than the tail. The scales were large and deciduous; the back green and semipellucid; the sides and belly silvery and opaque; the edge of the belly smooth; the tail forked.

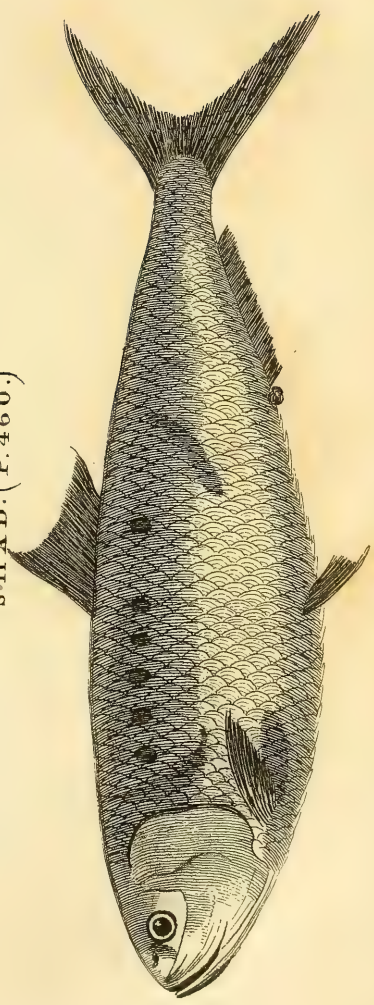
5. SHAD. *Θγίσσα*? *Arist. Hist. an. lib. ix. c. 37. Strabo lib. xv. 486. xvii. 566. Athenæus, lib. iv. 131. vii. 328. Oppian Halieut. i. 244.*
Alausa? *Ausonii Mosella, 128.*
Laccia, chiepa. Salvian, 104.
L'Alose. Belon, 307.
Thrissa. Rondel. 220. Gesner pisc. 20.
Bayeke, Meyfisch. Schonevelde, 13.
Shad, or Mother of Herrings. Wil. Ichth. 227. Raii syn. pisc. 105.
Clupea apice maxilla superiore bifido, maculis nigris utrinque. Arted. synonym. 15.
Clupea Alosa. Cl. lateribus nigro maculatis, rostro bifido. Lin. syst. 523. Gm. Lin. 1404. Gronov. Zooph. No. 347.
L'Alose. Duhamel Tr. des Pesches, ii. 315. sect. 3. tab. 1. fig. 1.
L'Alose. Bloch Ichth. i. 167. tab. 30. f. 1.
La Clupee alose. De la Cepede Hist. des Poissons. v. 447.
Clupea apice maxilla supe-

NEITHER *Aristotle*, *Athenæus*, or *Oppian*, have described their *Θγίσσα* with such precision, as to induce us to translate it the Shad, without affixing to it our sceptic mark. *Ausonius* has been equally negligent in respect to his *Alausa*:

WHITE BAIT.(P.465.)



SHAD.(P.460.)



all he tells us is, that it was a very bad fish :

Stridentesque focis obsonia plebis ALAUSAS.

Alausæ crackling on the embers are
Of wretched poverty th' insipid fare.

But commentators have agreed to render the *Θρισσα* of the first, and the *Alausa* of the last, by the word Shad. Perhaps they were directed by the authority of *Strabo*, who mentions the *Θρισσα* the supposed Shad, and the *Κεστρευς*, or Mullet, as fishes that ascend the *Nile* at certain seasons, which, with the Dolphin* of that river, he says, are the only kinds that venture up from the sea for fear of the crocodile. That the two first are fishes of passage in the *Nile*, is confirmed to us by *Belonius*, † and by *Hasselquist*. ‡ The last says that the Shad is found in the *Mediterranean* near *Smyrna*, and on the coast of *Egypt*, near *Rosetto*; and that in the months *December* and *January* it ascends the *Nile*, as high as *Cairo*: that it is stuffed with pot mar-

* This is the *Dolphin* of the *Nile*, a fish now unknown to us. *Pliny lib. viii. c. 25.* says, it had a sharp fin on its back, with which it destroyed the crocodile, by thrusting it into the belly of that animal, the only penetrable place.

† *Belon. Itin.* 98.

‡ *P.* 385. 388. *Suedish edition.* p. 226. *English edition.*

joram, and when dressed in that manner will very nearly intoxicate the eater.

In *Great Britain* the *Severn* affords this fish in higher perfection than any other river. It makes its first appearance there in *May*, but in very warm seasons in *April*; for its arrival, sooner or later, depends much on the temper of the air. It continues in the river about two months, and then is succeeded by a variety which we shall have occasion to mention hereafter. The *Severn* shad is esteemed a very delicate fish about the time of its first appearance, especially in that part of the river that flows by *Gloucester*, where they are taken in nets, and usually sell dearer than salmon: some are sent to *London*, where the fishmongers distinguish them from those of the *Thames*, by the *French* name of *Alose*.

Whether they spawn in this river and the *Wye* is not determined, for their fry has not yet been ascertained. The old fish come from the sea into the river in full roe. In the months of *July* and *August*, multitudes of the bleak frequent the river near *Gloucester*; some of them are as big as a small herring, and these the fishermen erroneously suspect to be the fry of the shad. Numbers of these are taken near

Gloucester in those months only, but none of the emaciated shad are ever caught in their return.*

The *Thames* shad does not frequent that river till the latter end of *May* or beginning of *June*, and is esteemed a very insipid coarse fish. The *Severn* shad is sometimes caught in the *Thames*, though rarely, and called *Allis* (no doubt *Alose*, the *French* name) by the fishermen, in that river. About the same time, and rather earlier, the variety called near *Gloucester* the *Twaite*, makes its appearance, and is taken in great numbers in the *Severn*, and is held in as great disrepute as the shad of the *Thames*. The differences between each variety are as follow:†

The true Shad weighs sometimes eight pounds, but its general size is from four to five.

The *Twaite*, on the contrary, weighs from half a pound to two pounds, which it never exceeds.

The *Twaite* differs from a small shad only in having one or more round black spots on the sides; if only one, it is always near the gill,

* *Belon* also observes, that none are taken in their return, *on les prend en montant contre les rivières, et jamais en descendant.*

† I suspect that the Shad and *Twaite* are distinct species, and correspond with the *Alose* and *Feinte* of *Duhamel*. ED.

but commonly there are three or four, placed one under the other.*

DESCRIP-
TION.

The other particulars agree in each so exactly, that the same description will serve for both.

The head slopes down considerably from the back, which, at the beginning, is very convex, and rather sharp; the body from thence grows gradually less to the tail; the under jaw is rather longer than the upper; the teeth very minute; the dorsal fin is placed very near the centre, is small, and the middle rays are the longest; the pectoral and ventral fins are small; the tail vastly forked; the belly extremely sharp, and most strongly serrated; the back is of a dusky blue; above the gills begins a line of dark spots, which mark the upper part of the back on each side; the number of these spots is uncertain in different fish, from four to ten.

* I must here acknowledge my obligations to Doctor *Lysons*, of *Gloucester*, for his communications relating to this fish, as well as to several other articles relating to those of the *Severn*.

Le Pretre ou spret de Calais.	Blanche. <i>ib.</i> vol. ii. sect. 3.	6. WHITE BAIT.
<i>Duhamel Tr. des Pesches,</i>	<i>p.</i> 478. <i>tab.</i> 17. <i>fig.</i> 6.?	
<i>vol.</i> iii. <i>sect.</i> 4. <i>p.</i> 49. <i>tab.</i>	<i>Pennant's Journey to Dover,</i>	
8. <i>fig.</i> 7.?	i. 23. <i>Br. Zool.</i> iii. 371.	
Le Franc-Blaquet ou Franche	(Article Bleak.)	

[MR. *PENNANT* was either deceived in the specimens sent him as the White Bait, or the branchiostegous rays were injured, since he counted only three instead of eight of these rays which number they certainly possess. He thus speaks of them. ED.

During the month of *July* there appear in the *Thames*, near *Blackwall* and *Greenwich*, innumerable multitudes of small fish, which are known to the *Londoners* by the name of White Bait. They are esteemed very delicious when fried with fine flour, and occasion, during the season, a vast resort of the lower order of epicures to the taverns contiguous to the places they are taken at.

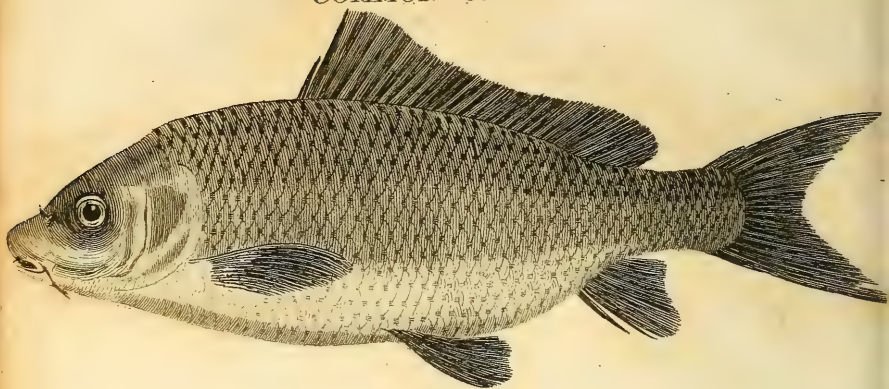
Its usual length is two inches; the under jaw is the longest; the irides are silvery, the pupil black; the dorsal fin is placed nearer to the head than to the tail, and consists of about fourteen rays; the side line is straight; the tail forked, the tips black; the head, sides, and belly, are silvery; the back tinged with green.

DESCRIP-
TION.

[In the Journey from *London* to *Dover*, Mr. *Pennant* says, " This seems a distinct fish, perhaps the same with the *pretre* or *spret de Calais* of M. *Duhamel*, and the *blanquet*, so named from its whiteness, which are found off the coast of *Normandy*."

Whether the White Bait is ever found in roe we have been unable to ascertain, but the accurate *Duhamel* asserts that the *Franc Blanquet* (of the identity of which we entertain little doubt) is full of eggs and milt in *November* and *December*. ED.

COMMON CARP.



BREAM. (P. 478.)



GENUS XLVIII. CYPRINE.

MOUTH without teeth.

RAYS branchiostegous three.

FIN one dorsal.

* With bearded mouths.

- | | | |
|---|---|---------------------|
| Κυπρίνος? <i>Arist. Hist. an.</i>
<i>lib.</i> iv. 8. vi. 40. viii. 20. ii.
30. <i>Oppian Halieut.</i> i. 101.
592. | Cyprinus Carpio. C. pinna ani
radiis 9. cirris 4. pinnæ dor-
salis radio secundo postice
serrato. <i>Lin. syst.</i> 525. <i>Gm.</i>
<i>Lin.</i> 1411. <i>Gronov. Zooph.</i>
No. 330. | 1. CARP
CYPRINE. |
| Raina Burbara. <i>Salvian.</i> 92. | <i>Lin.</i> 1411. <i>Gronov. Zooph.</i> | |
| La Carpe. <i>Belon</i> , 267. | No. 330. | |
| Cyprinus. <i>Rondel. fluviat.</i>
150. <i>Gesner pisc.</i> 309. | <i>Karp. Faun. Suec.</i> No. 359.
La Carpe. <i>Duhamel Tr. des</i>
<i>Pesches</i> , ii. 509. <i>sect.</i> 3.
<i>tab.</i> 26. <i>fig.</i> 1. | |
| Cyprinus nobilis, edle Karpe,
<i>Karpffe. Schonevelde</i> , 32. | | |
| Carp. <i>Wil. Ichth.</i> 245. <i>Raii</i>
<i>syn. pisc.</i> 115. | La Carpe. <i>Bloch ichth.</i> i. 77.
<i>tab.</i> 16. | |
| Cyprinus cirris quatuor, ossi-
culo tertio pinnarum dorsi,
ac ani uncinulis armato.
<i>Arted. synon.</i> 3. | Le Cyprin Carpe. <i>De la Ce-
pede Hist. des Poissons.</i> v.
504. | |

THIS is one of the naturalized fish of our country, and is said to have been introduced by *Leonard Maschal*, about the year 1514,* to

* *Fuller's British Worthies, Sussex.* 113.

whom we were also indebted for that excellent apple the *pepin*. The many good things that our island wanted before that period, are enumerated in this old distich :

Turkies, *carps*, hops, pickerel, and beer,
Came into *England* all in one year.

That the carp, however, was known here long before, is proved by the following extract* made from the *Boke of St. Alban's* printed at *Westminster*, by *Wynkyn de Worde*, in the year 1496.

‘ The carpe is a dayntous fisshe, but there
‘ ben but fewe in *Englonde*, and therfore I
‘ wryte the casse of him. For he is too stronge
‘ enarmyd in the mouthe that there may noo
‘ weke harnays hold hym. And as touchyne
‘ his baytes, I have but lytyll knoolege of it,
‘ and we were loth to wryte more than I know
‘ and have provyd. But well I wote that the
‘ redde worm and the menow ben good baytyn
‘ for him at all tymes, as I have herd saye of
‘ persones credyble, and also founde wryten in
‘ bokes of credence.’

Russia wants these fishes at this day ; *Sweden* has them only in the ponds of the people of

* I think myself much obliged to Mr. *Haworth* in *Chancery-lane*, not only for this, but for several other curious remarks.

fashion; *Polish Prussia* is the chief seat of this species; they abound in the rivers and lakes of that country, particularly in the *Frisch* and *Curisch-haff*, where they are taken of a vast size. They are there a great article of commerce, and sent in well-boats to *Sweden* and *Russia*. The merchants purchase them out of the waters of the *noblesse* of the country, who draw a good revenue from this article. Neither are there wanting among our gentry, instances of some who make good profit of their ponds.

The antients do not separate the carp from the sea fish. We are credibly informed that they are sometimes found in the harbour of *Dantzick*, between the town and a small place called *Hela*.

They are very long-lived. *Gesner** brings an instance of one that was an hundred years old. They also grow to a very great size. On our own knowledge we can speak of none that exceeded twenty pounds in weight: but *Jovius*† says, that they were sometimes taken in the *Lacus Larius* (the *Lago di Como*) of two hundred pounds weight: and *Rzaczynski*‡ mentions others taken in the *Dniester* that were five feet in length.

* *Gesner pisc.* 312.

† *De piscibus Romanis*, 131.

‡ *Hist. Nat. Polonæ*, 142.

They are also extremely tenacious of life, and will live for a most remarkable time out of water. An experiment has been made by placing a carp in a net, well wrapped up in wet moss, the mouth only remaining out, and then hung up in a cellar, or some cool place, where it is frequently fed with white bread and milk, and is besides often plunged into water. Carp thus managed have been known, not only to have lived above a fortnight, but to grow exceedingly fat, and far superior in taste to those that are immediately killed from the pond.*

FECUN-
DITY.

The carp is a prodigious breeder: its quantity of roe has been sometimes found so great, that when taken out and weighed against the fish itself, the former has been found to preponderate. From the spawn of this fish *Caviare* is made for the *Jews*, who hold the sturgeon in abhorrence. We have forbore, in this work, to enter into minute calculations of the numbers each fish may produce. It has already been most skilfully performed by Mr. *Harmer*, and printed in the *Philosophical Transactions* of the

* This was told me by a gentleman of the utmost veracity, who had twice made the experiment. The same fact is related by that pious Philosopher Doctor *Derham*, in his *Physico-Theology*, edit. 9th. 1737. ch. 1. p. 7. n. e.

year 1767. We shall, in our Appendix, take the liberty of borrowing such part of his tables of the fecundity of fishes, as will demonstrate the kind attention of Providence, towards the preserving so useful a class of animals for the service of its other creatures.

These fish are extremely cunning, and on that account are by some styled the *river fox*. They will sometimes leap over the nets, and escape that way; at others, will immerse themselves so deep in the mud, as to let the net pass over them. They are also very shy of taking a bait; yet at the spawning time they are so simple, as to suffer themselves to be tickled, handled, and caught by any body that will attempt it.

The carp is apt to mix its milt with the roe of other fishes, from which is produced a spurious breed: we have seen the offspring between it and the tench, which bore the greatest resemblance to the first; and have also heard of the same mixture between it and bream.

The carp is of a thick shape; the scales very large, and when in best season of a fine gilded hue. The jaws are of equal length; there are no teeth in the jaws, or on the tongue; but at the entrance of the gullet, above and below, are certain bones that act on each other, and comminute the food before it passes down; on

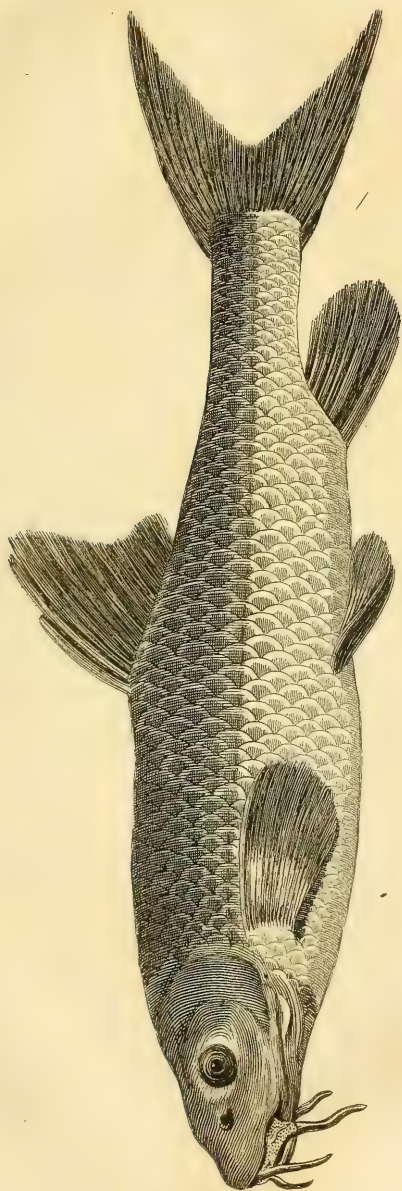
DESCRIP-
TION.

each side of the mouth is a single beard; above that on each side another, but shorter; the dorsal fin extends far towards the tail, which is a little bifurcated; the third ray of the dorsal fin is very strong, and armed with sharp teeth, pointing downwards; the third ray of the anal fin is constructed in the same manner.

2. BARBEL. *Barbus. Ausonius Mosella*, 94. *ani radiis 7. cirris 4. pinnae dorsi radio secundo utrinque serrato. Lin. Syst.* 525. *Gm. Lin.* 1409. *Gronov. Zooph. No.* 331.
- Barbeau. Belon*, 299. *Barbe, Barble. Schonevelde*, 29. *Barbe, Barble. Wulff Boruss. No.* 52.
- Barbus, Barbo. Salvian*, 86. *Le Barbeau. Duhamel Tr. des Pesches*, ii. 519. *sect. 3. tab. 27. fig. 1.*
- Barbus. Rondel. fluvial.* 194. *Cyprinus oblongus, maxilla superiore longiore, cirris quatuor, pinna ani ossiculorum septem. Arted. Synon.* 8. *Le Barbeau. Bloch Ichth.* i. 91. *tab. 18.*
- Gesner pisc.* 123. *Le Cyprin barbeau. De la Cepede Hist. des Poissons.* v. 524.
- Cyprinus Barbus. C. pinna*

THIS fish was so extremely coarse, as to be overlooked by the antients till the time of *Ausonius*, and what he says is no panegyric on it; for he lets us know it loves deep waters, and that when it grows old it was not absolutely bad.

BARBEL.



Laxos exerce BARBE *natus*,
Tu melior pejore ævo, tibi contigit uni
Spirantum ex numero non inlaudata senectus.

They frequent the still and deep parts of rivers, and live in society, rooting like swine with their noses in the soft banks. They are so tame as to suffer themselves to be caught with the hand; and people have been known to take numbers by diving for them. In summer they move about during night in search of food, but towards autumn, and during winter, confine themselves to the deepest holes. They are the worst and coarsest of fresh water fish, and seldom eaten but by the poorer sort of people, who sometime boil them with a bit of bacon to give them a relish. The roe is very noxious, affecting those who unwarily eat of it with a *nausea*, vomiting, purging, and a slight swelling.

The Barbel is sometimes found of the length of three feet, and eighteen pounds in weight; it is of a long and rounded form; the scales not large. Its head is smooth; the nostrils placed near the eyes; the mouth is placed below; on each corner is a single beard, and another on each side the nose; the dorsal fin is armed with a remarkable strong spine, sharply serrated, with which it can inflict a very severe wound

DESCRIP-
TION.

on the incautious handler, and even do much damage to the nets; the pectoral fins are of a pale brown color; the ventral and anal tipped with yellow; the tail a little bifurcated, and of a deep purple; the side line is strait. The scales are of a pale gold color, edged with black; the belly is white.

3. TENCH. *Tinca. Ausonius Mosella*, 123. *Syst.* 526. *Gm. Lin.* 1413.
Tinca. Jovius, 124. *Gronov. Zooph.* No. 328.
Tinca, Tenca. Salvian, 90. *Suture, Linnare, Skomakare.*
La Tanche. Belon, 325. *Faun. Suec.* No. 363.
Tinca. Rondel. fluviat. 157. *Schleihe, Schleggen. Wulff Bo-*
Gesner pisc. 984. *russ.* No. 55.
Schley, Slye. Schonevelde, 76. *La Tanche. Duhamel Tr. des*
Tench. Wil. Ichth. 251. *Raii Pesches*, ii. 506. *sect. 3. tab.*
syn. pisc. 117. *25. fig. 2.*
Cyprinus mucosus totus ni- *La Tanche. Bloch ichth.* i. 70.
grescens, extremitate caudæ *tab. 14.*
æquali. Arted. synonym. 5. *Le Cyprin tanche. De la Ce-*
Cyprinus Tinca. C. pinna ani *pède Hist. des Poissons.* v.
radiis 25, cauda integra, cor- 537.
pore mucoso, cirris 2. Lin.

THE tench underwent the same fate with the barbel, in respect to the notice taken of it by the early writers; and even *Ausonius*, who first mentions it, treats it with such disrespect, as evinces the great capriciousness of taste; for that fish, which at present is held in such good

repute, was in his days the repast only of the *Canaille*.

*Quis non et virides vulgi solatia Tincas
Norit?*

It has been by some called the *Physician* of the fish, and the slime said to be so healing, that the wounded apply it as a styptic or balsam. The ingenious *Moses Brown*, in his piscatory eclogues, says, that even the voracious pike will spare the tench on account of its healing powers:

The *Tench* he spares a medicinal kind:
For when by wounds distress, or sore disease,
He courts the salutary fish for ease;
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides.*

What virtue its slime may have to the inhabitants of the water, we will not vouch for, but its flesh is a wholesome and delicious food to those of the earth. The *Germans* are of a different opinion. By way of contempt, they call it *Shoemaker*. *Gesner* even says, that it is insipid and unwholesome.

It loves still waters, and is rarely found in rivers: is very foolish, and easily caught.

It does not commonly exceed four or five

* *Ecl.* II.

pounds in weight, but we have heard of one that weighed ten pounds; *Salvianus* speaks of some that arrived at twenty pounds.

DESCRIP-
TION.

The tench is thick and short in proportion to its length; the scales are very small, and covered with slime; the irides are red; there is sometimes, but not always, a small beard at each corner of the mouth. The color of the back is dusky; the dorsal and ventral fins are of the same color; the head, sides, and belly, of a greenish cast, most beautifully mixed with gold, which is in its greatest splendor when the fish is in the highest season; the tail is quite even at the end, and very broad.

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| 4. GUDGEON. <i>Gobio. Ausonius Mosella</i> , 132. | <i>Cyprinus Gobio. C. pinna ani</i> |
| <i>Gobio fluviatilis. Salvian</i> , | <i>radiis ii. cirris 2. Lin. syst.</i> |
| 214. | <i>Nat. 526. Gm. Lin. 1412.</i> |
| <i>Goujon de riviere. Belon</i> , | <i>Gronov. Zooph. No. 329.</i> |
| 322. | <i>Le Goujon. Duhamel Tr. des</i> |
| <i>Gobio fluviatilis. Rondel. flu-</i> | <i>Pesches. ii. 497. sect. 3.</i> |
| <i>viat. 206. Gesner pisc. 399.</i> | <i>tab. 23. fig. 5.</i> |
| <i>Gudgeon. Wil. Ichth. 264.</i> | <i>Le Goujon. Bloch ichth. i. 49.</i> |
| <i>Ruii syn. pisc. 123.</i> | <i>tab. 8. f. 2.</i> |
| <i>Cyprinus quincuncialis macu-</i> | <i>Le Cyprin goujon. De la Ce-</i> |
| <i>losus, maxilla superiore lon-</i> | <i>pede Hist. des Poissons, v.</i> |
| <i>giore cirris duobus ad os.</i> | 533. |
| <i>Arted. synon. 2.</i> | |

ARISTOTLE mentions the gudgeon in two places; once as a river fish, and again as a

species that is gregarious : in a third place he describes it as a sea fish ; we must therefore consider the *KwSiōs* he mentions, *lib.* ix. c. 2. and *lib.* viii. c. 19. as the same with our species.*

This fish is generally found in gentle streams, and is of a small size : those few, however, that are caught in the *Kennet*, and *Cole*, are three times the weight of those taken elsewhere. The largest we ever heard of was taken near *Uxbridge*, and weighed half a pound. They bite eagerly, and are assembled by raking the bed of the river ; to this spot they immediately crowd in shoals, expecting food from this disturbance.

The shape of the body is thick and round ; the irides tinged with red ; the gill covers with green and silver ; the lower jaw is shorter than the upper ; at each corner of the mouth is a single beard ; the back olive, spotted with black ; the side-line strait ; the sides beneath that silvery ; the belly white. The tail is forked ; that, as well as the dorsal fin, is spotted with black.

DESCRIPTION.

* The gudgeon is enumerated among the *Syrian* fish, by Dr. *Russel*, p. 75.

** Without Beards.

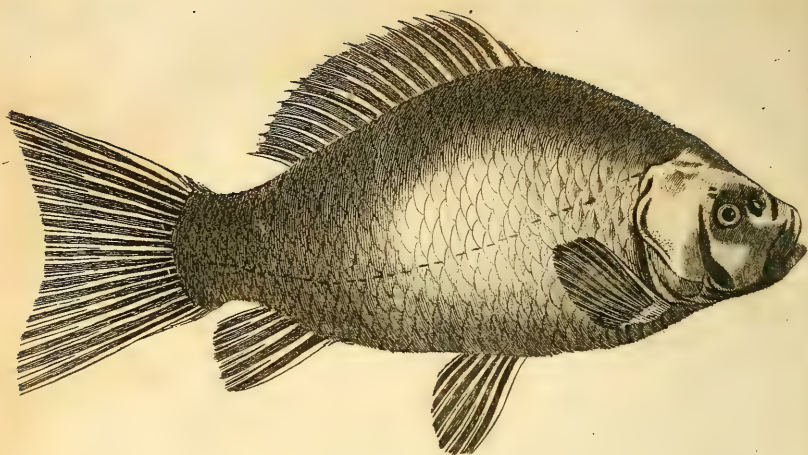
5. BREAM. La Bremme. *Belon*, 318. Braxen. *Faun. Suec.* No. 360.
 Cyprinus latus sive Brama. *Rondel. fluviat.* 154. *Gesner pisc.* 316, 317. Gareikl. *Kram.* 391. Brekmen.
 Brassem, Brachsem. *Schonevelde*, 33. *Wulff. Boruss.* No. 66.
 Bream. *Wil. Ichth.* 248. *Raii Syn. pisc.* 116. La Breme. *Duhamel Tr. des Pesches.* ii. 504. *sect. 3. tab. 25. fig. 1.*
 Cyprinus pinnis omnibus nigrescentibus, pinna ani ossiculorum viginti septem. *Arted. Synon.* 4. La Breme. *Bloch ichth.* i. 64. *tab. 13.*
 Cyprinus Brama. *Lin. Syst.* 531. *Gm. Lin.* 1436. *Gronov. Zooph.* No. 345. Le Cyprin Breme. *De la Cepede Hist. des Poissons*, v. 599.

THE bream is an inhabitant of lakes, or the deep parts of still rivers. It is a fish that is very little esteemed, being insipid.

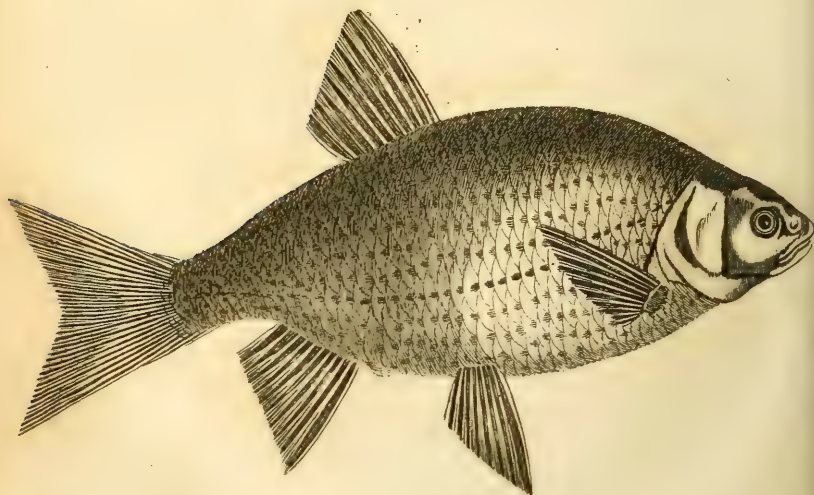
DESCRIP-
TION.

It is extremely deep, and thin in proportion to its length; the back rises very much, and is very sharp at the top; the head and mouth are small; on some we examined in the spring, were abundance of minute whitish tubercles; an accident which *Pliny* seems to have observed befalls the fishes of the *Lago Maggiore*, and *Lago di Como*.* The scales are very

* *Duo Lacus ITALIÆ in radicibus Alpium, LARIUS et VERBANUS appellantur, in quibus pisces omnibus annis VERGILIA-*



GIBELE CYPRINE. (P. 480.)



RUD. (P. 479.)

large; the sides flat and thin; the dorsal fin has eleven rays, the second of which is the longest; that fin, as well as all the rest, are of a dusky color; the back of the same hue; the sides yellowish; the tail is very large, and of the form of a crescent.

<i>Xαράξ?</i> <i>Athenæus</i> , lib. viii.	Cyprinus Erythrophthalmus.	6. RUD.
355. <i>Oppian Halieut.</i> i. 174.	C. pinna ani radiis 15. pin-	
<i>La Plestia?</i> <i>Belon</i> , 309. <i>La</i>	nis rubris. <i>Lin. Syst.</i> 530.	
<i>Rosse</i> , 319.	<i>Gm. Lin.</i> 1429.	
Finscale. <i>Plot's Oxf.</i> 184.	<i>Sarf. Isarf. Faun. Suec. No.</i>	
<i>Rutilus latior</i> , seu <i>Rubellio</i>	366.	
<i>fluviatilis</i> a <i>Rud</i> , <i>Roud</i> ,	<i>Le Rotengle. Bloch ichth. i.</i>	
or Finscale. <i>Wil. Ichth.</i>	25. tab. 1.	
252. <i>Raii syn. pisc.</i> 118.	<i>Le Cyprin rotengle. De la Ce-</i>	
<i>Cyprinus. Arted. synon.</i> 6.	<i>pede Hist. des Poissons. v.</i>	
<i>No.</i> 8.	583.	

THIS fish is found in the *Cherwell*, near *Oxford*, in the *Witham* in *Lincolnshire*, and in the fens in *Holderness*.

Its body is extremely deep, like that of the bream, but much thicker.

The head is small; the irides yellow, varying in some almost to redness; the nostrils large; the back vastly arched, and sloping off

DESCRIP-
TION.

RUM ortu existunt, squamis conspicui crebris atque præacutis, clavorum caligarium effigie: nec amplius quam circa eum mensem, visuntur. *Lib. ix. c. 18.*

suddenly to the head and tail; the scales very large; the side line very slightly incurvated. The dorsal fin consists of eleven rays; the first very short, the second very strong, and serrated on each side. The pectoral fins consist of seventeen; the ventral of nine; the anal of thirteen rays. The back is of an olive color; the sides and belly of a gold color, with certain marks of red; the ventral and anal fins, and the tail, generally of a deep red; the tail forked.

We believe this to be the same with the *Shallow* of the *Cam*; which grows to the length of thirteen inches. It spawns in *April*.

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| 7. GIBELE. Cyprinus Gibelio. C. pinna dorsali radiis xix. cauda lunulata. | Klein oder Giblichen. <i>Gesner icon. anim.</i> 298. |
| Cyprinus brevis. variet. <i>Klein.</i> | La Gibe. <i>Bloch ichth.</i> i. 61. tab. 12. |
| <i>Miss. pisc.</i> v. 60. tab. ii. f. 2. | Le Cyprin Gibe. <i>De la Cepede Hist. des Poissons</i> , v. 567. |
| Carassi primum genus. <i>Wil.</i> | Crucian. <i>Br. Zool.</i> iv. 364. |
| <i>Ichth.</i> 250. | |

THIS species is common in many of the fish ponds about *London*, and other parts of the south of *England*; but I believe is not a native fish.

DESCRIP-
TION.

It is very deep and thick; the back is much arched; the dorsal fin consists of nineteen rays; the two first strong and serrated. The pectoral

fins have (each) thirteen rays ; the ventral nine ; the anal seven or eight ; the lateral line parallel with the belly.

The color of the fish in general is a deep yellow ; the meat is coarse, and little esteemed.

[The editor has the authority of the late Mr. *Dryander* to say, that the above is the fish described in the former edition as the Crucian, and of which indeed it seems to have been considered as a variety by *Linnæus* and other authors. It, however, differs in many respects, being a longer fish, not so deep as the crucian, having a double row of sharp, instead of a single row of blunt teeth ; the lateral line curved instead of strait ; the tail in form of a crescent, instead of strait ; the back more rounded, the head and the scales much larger. The anal fin of the Gibeles has eight rays, the dorsal nineteen, the Crucian ten in the first, and twenty-one in the last.

Mr. *Dryander* said that the flesh of the Crucian is excellent, that of the Gibeles extremely coarse. ED.

2. ROACH. La Gardon, Roschie 2. en *Angleterre*. *Belon*, 316. Cyprinus Rutilus. Cyp. pinna
 ani radiis 12. rubicunda.
 Leuciscus. *Rondel. fluviat.* *Lin. syst.* 529. *Gm. Lin.*
 191. 1426.
 Rutilus sive Rubellus fluviatilis. *Gesner pisc.* 820. *Mort. Faun. Suec. No.* 372.
Zert. Wulff Boruss. No. 59.
 Rottauge. *Schonevelde*, 63. *Alt. Kram.* 395.
 Roche. *Wil. Ichth.* 262. La Rosse. *Duhamel Tr. des*
Pesches. ii. 499. *sect.* 3.
Leuciscus prior. Rondel. *tab.* 24. *fig.* 2.
 260. *Raii syn. pisc.* 122, La Rosse. *Bloch ichth.* i. 28.
 121. *tab.* 2.
 Cyprinus sargus dictus. Cyp. Le Cyprin rougeatre. *De la*
 iride pinnis ventralibus ac *Cepede. Hist. des Poissons.*
 ani plerumque rubentibus. *v.* 581.
Arted. synon. 9, 10.

SOUND as a Roach, is a proverb that appears to be but indifferently founded, that fish being not more distinguished for its vivacity than many others; yet it is used by the *French* as well as us, who compare people of strong health to their *Gardon*, our roach.

It is a common fish, found in many of our deep still rivers, affecting, like the others of this genus, quiet waters. It is gregarious, keeping in large shoals. We have never seen them very large. Old *Walton* speaks of some that weighed two pounds. In a list of fish sold in the *London* markets, with the greatest weight of each, communicated to us by an intelligent

fishmonger, mention is made of one whose weight was five pounds.

The roach is deep, but thin, and the back is much elevated, and sharply ridged: the scales large, and fall off very easily. Side line bends much in the middle towards the belly.

DESCRIP-
TION.

Une vandoise, ou Dard. <i>Be- lon</i> , 313.	<i>Lin. syst.</i> 528. <i>Gm. Lin.</i> 1424.	9. DACE.
Leucisci secunda species. <i>Rondel.</i> 192. <i>Gesner pisc.</i> 26.	<i>Laugéle. Meyer's An.</i> II. tab. 97.	
Dace, or Dare. <i>Will. Ichth.</i> 260. <i>Raii syn. pisc.</i> 121.	La Vandoise ou Dard. <i>Duhamel Tr. des Pesches.</i> ii. 501.	
Cyprinus decem digitorum, rutilo longior, et angustior, pinna ani radiorum decem. <i>Arted. synonym.</i> 9.	<i>sect. 3. tab. 24. fig. 3.</i> La Vandoise. <i>Bloch ichth.</i> iii. 119. tab. 97. f. 1.	
Cyprinus leuciscus. Cyp. pinna ani radiis 10. dorsali 9.	Le Cyprin Vandoisc. <i>De la Cepede Hist. des Poissons.</i> v. 580.	

THIS, like the roach, is gregarious, haunts the same places, is a great breeder, very lively, and, during summer, is very fond of frolicking near the surface of the water. This fish and the roach are coarse and insipid meat.

Its head is small; the irides of a pale yellow; the body long and slender; its length seldom above ten inches, though in the above-mentioned list is an account of one that weighed

DESCRIP-
TION.

a pound and a half; the scales smaller than those of the roach.

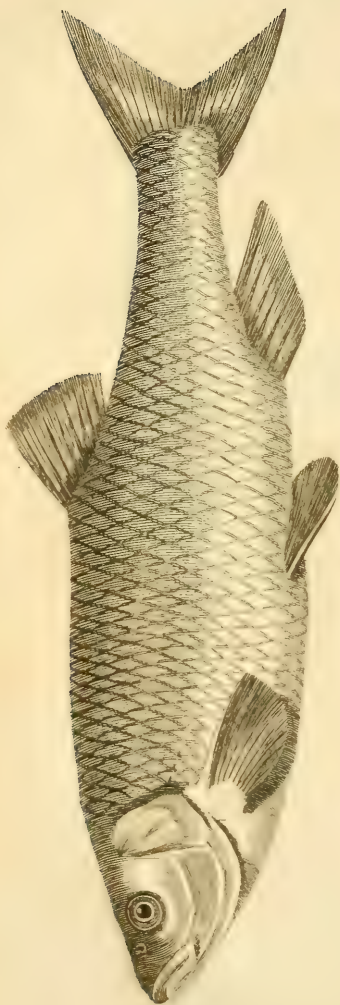
The back is varied with dusky, with a cast of yellowish green; the sides and belly silvery; the dorsal fin dusky; the ventral, anal, and caudal fins red, but less so than those of the former; the tail is very much forked.

10. GRAIN-
ING.

The Graining. *Voy. to the Hebrides. p. 12.*

THE Graining is found in the *Mersey*, near *Warrington*: has much the resemblance of a dace, but is more slender, and the back straiter. The usual length about seven inches and a half. The depth in proportion to the length of this is as one to five, of the dace as one to four. The color of the back is silvery, with a bluish cast. The eyes, ventral and anal fins are red, but paler than those of the dace; the pectoral fin redder.

CHUB. (P. 485.)



BLEAK. (P. 487.)



- Capito. *Auson. Mosella*, 85. quatuordecim, rostro rotun- 11. CHUB.
 Squalus, Squaglio. *Salvian*, dato. *Gm. Lin.* 1430.
 84. Cyprinus cubitalis pinna ani
 Le chevesne, Testard, Vilain. ossiculorum. 14. *Arted.*
Belon, 315. *synon.* 7.
 Cephalus fluviatilis. *Rondel.* Gose. *Wulff. Boruss.* 47.
fluviat. 190. Chevanne, &c. *Duhamel, Tr.*
 Capito sive Cephalus fluviatilis. *des Pesches*, ii. 502. *tab.* 24.
Gesner pisc. 182. *f.* 4.
 Chub, or Chevin. *Wil. Ichth.* Le Vilain ou Meunier. *Bloch*
 255. *Raii syn. pisc.* 119. *ichth.* i. 39. *tab.* 6.
 C. Jese. C. pinna ani radiis Le Cyprin Jesse. *De la Cepede*
Hist. des Poissons, v. 585.

SALVIANUS imagines this fish to have been the *Squalus** of the antients, and grounds his opinion on a supposed error in a certain passage in *Columella* and *Varro*, where he would substitute the word *Squalus* instead of *Scarus*: *Columella* says no more, than that the old Romans gave much attention to their stews, and kept even the sea fish in fresh water, paying as much respect to the *Mullet* and *Scarus* as those of his days did to the *Muræna* and *Basse*.

That the *Scarus* was not our Chub, is very evident; not only because the Chub is entirely

* A cartilaginous fish, a shark. *Vide Plin. lib. IX. c. 24.*
Ovid also ranks his *Squalus* with the sea fish :

Et SQUALUS, et tenui suffusus sanguine MULLUS. Halieut.
 147.

an inhabitant of fresh waters, but likewise it seems improbable that the *Romans* would give themselves any trouble about the worst of river fish, when they neglected the most delicious kinds; all their attention was directed towards those of the sea: the difficulty of procuring them seems to have been the criterion of their value, as is ever the case with effete luxury.

The chub is a very coarse fish, and full of bones: it frequents the deep holes of rivers, and, during summer, commonly lies on the surface, beneath the shade of some tree or bush. It is a very timid fish, sinking to the bottom on the least alarm, even at the passing of a shadow, but will soon resume its situation. It feeds on worms, caterpillars, grasshoppers, beetles, and other coleopterous insects that happen to fall into the water; and it will even feed on cray-fish. It will rise to a fly.

This fish takes its name from its head, not only in our own, but in other languages: we call it *Chub*, according to *Skinner*, from the *English*, *Cop*, a head; the *French*, *Testard*; the *Italians*, *Capitone*.

DESCRIP-
TION.

It does not grow to a large size; we have known some that weighed above five pounds, but *Salvianus* speaks of others that were eight or nine pounds in weight.

The body is oblong, rather round, and of a pretty equal thickness the greatest part of its length; the scales are large. The irides silvery; the cheeks of the same color; the head and back of a deep dusky green; the sides silvery, but in the summer yellow; the belly white; the pectoral fins of a pale yellow; the ventral and anal fins red; the tail a little forked, of a brownish hue, but tinged with blue at the end.

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| Alburnus. <i>Auson. Mosella,</i>
126. | 531. <i>Gm. Lin.</i> 1434. <i>Gro-</i> 12. BLEAK.
<i>nov. Zooph. No.</i> 336. |
| Able ou Ablette. <i>Belon,</i> 319. | <i>Loja. Faun. Suec. No.</i> 373. |
| Alburnus. <i>Rondel. fluviat.</i>
208. <i>Gesner pisc.</i> 23. | Spitslauben, schneiderfischl.
<i>Kram.</i> 395 |
| Albula minor. <i>Witinck,</i>
<i>Witek, and Blike. Schone-</i>
<i>velde. II. Tab.</i> 1. | <i>Ukeleyen. Wulff Boruss. No.</i>
64. |
| Bleak. <i>Wil. Ichth.</i> 263. <i>Raii</i>
<i>syn. pisc.</i> 123. | <i>L'Able. Duhamel Tr. des</i>
<i>Pesches. ii. 493. sect. 3. tab.</i>
<i>23. fig.</i> 12. |
| Cyprinus quincuncialis, pinna
ani ossiculorum viginti. <i>Ar-</i>
<i>ted. synon.</i> 10. | <i>L'Able. Bloch ichth. i. 47.</i>
<i>tab. 8. f.</i> 4. |
| Cyprinus Alburnus. <i>Lin. syst.</i> | <i>Le Cyprin able. De la Cepede</i>
<i>Hist. des Poissons. v. 597.</i> |

THE taking of these, *Ausonius* let us know, was the sport of children:

ALBURNOS prædam puerilibus hamis.

They are very common in many of our rivers, and keep together in large shoals. These fish seem at certain seasons to be in great agonies; they tumble about near the surface of the water, and are incapable of swimming far from the place, but in about two hours recover, and disappear. Fish thus affected the *Thames* fishermen call *mad bleaks*. They seem to be troubled with a species of *Gordius* or hair-worm, of the same kind with those which *Aristotle** says that the *Ballerus* and *Tillo* are infested with, which torment them so, that they rise to the surface of the water and then die.

ARTIFICIAL
PEARLS.

Artificial pearls are made with the scales of this fish, and we think of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glass bubble, which is afterwards filled with wax. The *French* were the inventors of this art. Dr. *Lister*† tells us, that when he was at *Paris*, a certain artist used in one winter thirty hampers full of fish in this manufacture.

DESCRIP-
TION.

The bleak seldom exceeds five or six inches in length: their body is slender, greatly compressed sideways, not unlike that of the sprat.

* *Hist. an. lib.* VIII. c. 20.

† *Journey to Paris*, 142.

The eyes are large ; the irides of a pale yellow ; the under jaw the longest ; the lateral line crooked ; the gills silvery ; the back green ; the sides and belly silvery ; the fins pellucid ; the scales fall off very easily ; the tail much forked.

Φοξίωος? *Arist. Hist. an.* VI.
c. 13.

Le Veron. *Belon*, 324.

Pisciculus varius. *Rondel. fluviat.* 205.

Phoscium qui vulgo *veronus* (quasi varius) dicitur, *Belonius*, *Gesner pisc.* 715.

Elritze, Elderitze. *Schonevelde*, 57.

Pink, Minim, or Minow. *Wil. ichth.* 268. *Raii syn. pisc.* 125.

Cyprinus tridactylus varius oblongus teretiusculus, pin-

na ani ossiculorum octo. 13. MINOW.
Arted. synon. 12.

Cyprinus Phoxinus. Cyp. pinna ani radiis 8. macula fusca ad caudam, corpore pellucido. *Lin. syst.* 528. *Gm. Lin.* 1422.

Le Veron. *Duhamel Tr. des Pesches.* ii. 515. *sect. 3. tab. 26. fig. 7.*

Le Veron. *Bloch ichth.* i. 51. *tab. 8. f. 5.*

Le Cyprin Veron. *De la Cepede Hist. des Poissons.* v. 573.

THIS beautiful fish is frequent in many of our small gravelly streams, where it keeps in shoals.

The body is slender and smooth, the scales being extremely small. It seldom exceeds three inches in length.

DESCRIP-
TION.

The lateral line is of a golden color: the back flat, and of a deep olive: the sides and belly vary greatly in different fish; in a few they are of a rich crimson, in others bluish, in others white. The tail is forked, and marked near the base with a dusky spot.

14. GOLD. Kingo, the Gold Fish. *Kæmper Hist. Japan*, i. 137. Gold Fish. *Edw.* 209.
Kin-yu. Du Halde Hist. China. i. 19. 315. *Kin-yu, sive carpio auratus. Baster subsec.* ii. 78.
Cyprinus auratus. Cyp. pinna ani gemina, cauda transversa bifurca. Lin. syst. 527 *La Dorade Chinoise. Bloch ichth.* iii. 102. *tab.* 93, 94. *f.* 1—3.
Gm. Lin. 1418. *Faun. Suec. Le Cyprin doré. De la Cèpede Hist. des Poissons.* v. 553.
tab. 2. *Gronov. Zooph. No.* 342.

THESE fish are now quite naturalized in this country, and breed as freely in the open waters as the common carp.

They were first introduced into *England* about the year 1691, but were not generally known till 1728, when a great number were brought over, and presented first to Sir *Mathew Dekker*, and by him circulated round the neighborhood of *London*, from whence they have been distributed to most parts of the country.

In *China* the most beautiful kinds are taken in a small lake in the province of *Che-Kyang*. Every person of fashion keeps them for amusement, either in porcellane vessels, or in the small basons that decorate the courts of the *Chinese* houses. The beauty of their colors, and their lively motions, give great entertainment, especially to the ladies, whose pleasures, by reason of the cruel policy of that country, are extremely limited.

In form of the body they bear a great resemblance to a carp. They have been known in this island to arrive at the length of eight inches ; in their native place they are said * to grow to the size of our largest herring.

DESCRIP-
TION.

The nostrils are tubular, and form a sort of appendages above the nose ; the dorsal fin and the tail vary greatly in shape ; the tail is naturally bifid, but in many is trifid, and in some even quadrifid ; the anal fins are the strongest characters of this species, being placed not behind one another like those of other fish, but opposite each other like the ventral fins.

The colors vary greatly ; some are marked with a fine blue, with brown, with bright silver, the most predominant is gold of most amazing

* *Du Halde*, 316.

splendor; but their colors and form need not be dwelt on, since those who want the opportunity of seeing the living fish, may survey them expressed in the most animated manner, in the works of our ingenious and honest friend Mr. *George Edwards*.

APPENDIX.

APPENDIX.

No. I.

ON THE TOAD. P. 22.

SINCE the printing of that article I have been favored with some very curious accounts of this reptile, which will give greater light into its natural history than I am capable of, from a most unphilosophical but invincible aversion to the whole genus. The facts that will appear in the following lines, will serve to confirm my opinion of its being an innoxious animal, and, I hope, will serve to free numbers from a panic that is carried to a degree of infelicity, and also to redeem it from a persecution which the unmerited ill-opinion the world has conceived, perpetually exposes it to.

The gentlemen I am principally indebted to for my informations are *J. Arscott, esq;* of *Tehott*, in *Devonshire*, and *Mr. Pitfield*, of *Exeter*. Some of these accounts were addressed to *Doctor Milles*, Dean of *Exeter*; others to the worthy Prelate, the bishop of *Carlisle*, to

whom I owe these and many other agreeable correspondencies ; others again to myself.

Mr. *Arscott's* letters give a very ample history of the nature of the toad : they were both addressed to Doctor *Milles*, and both were the result of certain queries I proposed, which the former was so obliging as to give himself the trouble of answering in a most satisfactory manner.

I shall first take the liberty of citing Mr. *Arscott's* letter of *September* the 23d, 1768, which mentions some very curious particulars of this innocent reptile, which, for such a number of years, found an asylum from the good sense of a family which soared above all vulgar prejudices.

“ It would give me the greatest pleasure to
“ be able to inform you of any particulars wor-
“ thy Mr. *Pennant's* notice, concerning the toad
“ who lived so many years with us, and was so
“ great a favorite. The greatest curiosity in it
“ was its becoming so remarkably tame. It
“ had frequented some steps before the hall-
“ door some years before my acquaintance com-
“ menced with it, and had been admired by
“ my father for its size (which was of the
“ largest I ever met with) who constantly payed
“ it a visit every evening. I knew it myself
“ above thirty years, and by constantly feed-

“ing it, brought it to be so tame that it al-
 “ways came to the candle, and looked up as
 “if expecting to be taken up and brought upon
 “the table, where I always fed it with insects
 “of all sorts : it was fondest of flesh maggots,
 “which I kept in bran ; it would follow them,
 “and when within a proper distance, would fix
 “its eye, and remain motionless for near a
 “quarter of a minute, as if preparing for the
 “stroke, which was an instantaneous throwing
 “its tongue at a great distance upon the in-
 “sect, which stuck to the tip by a glutinous
 “matter : the motion is quicker than the eye
 “can follow. *

“I always imagined that the root of its
 “tongue was placed in the fore part of its
 “under jaw, and the tip towards its throat, by
 “which the motion must be a half circle ; by
 “which, when its tongue recovered its situa-
 “tion, the insect at the tip would be brought
 “to the place of deglutition. I was confirmed
 “in this, by never observing any internal mo-
 “tion in its mouth, excepting one swallow the
 “instant its tongue returned. Possibly I might

* This rapid capture of its prey might give occasion to the
 report of its fascinating powers. *Linnaeus* says, *Insecta in fauces*
fascino revocat.

“ be mistaken, for I never dissected one, but
“ contented myself with opening its mouth, and
“ slightly inspecting it.

“ You may imagine that a toad generally
“ detested (although one of the most inoffen-
“ sive of all animals) so much taken notice of
“ and befriended, excited the curiosity of all
“ comers to the house, who all desired to see it
“ fed, so that even ladies so far conquered the
“ horrors instilled into them by nurses, as to
“ desire to see it. This produced innumerable
“ and improbable reports, making it as large
“ as the crown of a hat, &c. &c. This I hope
“ will account for my not giving you particu-
“ lars more worth your notice. When I first
“ read the account in the papers of toads suck-
“ ing cancerous breasts, I did not believe a
“ word of it, not thinking it possible for them
“ to suck, having no lips to embrace the part,
“ and a tongue so oddly formed ; but as the
“ fact is thoroughly verified, I most impatiently
“ long to be fully informed of all particulars
“ relating to it.”

Notwithstanding these accounts will serve to point out some errors I had adopted, in respect to this reptile in my first sheet, yet it is with much pleasure I lay before the public a more

authentic history, collected from Mr. *Arscott's* second favor : the answer points out my queries, which it is needless to repeat.

Tehott, Nov. 1, 1768.

“ In respect to the queries, I shall here give
“ the most satisfactory answers I am capable
“ of.

“ First, I cannot say how long my father
“ had been acquainted with the toad before I
“ knew it; but when I first was acquainted
“ with it, he used to mention it as the old toad
“ I’ve known so many years; I can answer for
“ thirty-six years.

“ Secondly, No toads that I ever saw ap-
“ peared in the winter season. The old toad
“ made its appearance as soon as the warm
“ weather came, and I always concluded it
“ retired to some dry bank to repose till the
“ spring. When we new-lay’d the steps, I had
“ two holes made in the third step on each,
“ with a hollow of more than a yard long for
“ it, in which I imagine it slept, as it came
“ from thence at its first appearance.

“ Thirdly, It was seldom provoked : neither
“ that toad (nor the multitudes I have seen tor-
“ mented with great cruelty) ever shewed the
“ lest desire of revenge, by spitting or emitting

“ any juice from their pimples. Sometimes
“ upon taking it up it would let out a great
“ quantity of clear water, which, as I have
“ often seen it do the same upon the steps
“ when quite quiet, was certainly its urine,
“ and no more than a natural evacuation.

“ Fourthly, A toad has no particular enmity
“ for the spider ; he used to eat five or six with
“ his millepedes (which I take to be its chief
“ food) that I generally provided for it, before
“ I found out that flesh maggots, by their con-
“ tinual motion, was the most tempting bait ;
“ but when offered, it eat blowing flies and
“ humble bees that come from the rat-tailed
“ maggot in gutters, or in short any insect that
“ moved. I imagine if a bee was to be put
“ before a toad, it would certainly eat it to its
“ cost ; but as bees are seldom stirring at the
“ same time that toads are, they can seldom
“ come in their way, as they seldom appear
“ after sun-rising, or before sun-set. In the
“ heat of the day they will come to the mouth
“ of their hole, I believe, for air. I once from
“ my parlour window observed a large toad I
“ had in the bank of a bowling-green, about
“ twelve at noon, a very hot day, very busy and
“ active upon the grass ; so uncommon an ap-
“ pearance made me go out to see what it was,

“ when I found an innumerable swarm of
“ winged ants had dropped round his hole,
“ which temptation was as irresistible as a
“ turtle would be to a luxurious alderman.

“ Fifthly, Whether our toad ever propagated
“ its species I know not, rather think not, as
“ it always appeared well, and not lessened in
“ bulk, which it must have done, I should
“ think, if it had discharged so large a quan-
“ tity of spawn as toads generally do. The
“ females that are to propagate in the spring,
“ I imagine, instead of retiring to dry holes,
“ go into the bottom of ponds, and lay torpid
“ among the weeds ; for to my great surprise
“ in the middle of the winter, having for amuse-
“ ment put a long pole into my pond, and twisted
“ it till it had gathered a large volume of weed,
“ on taking it off I found many toads, and
“ having cut some asunder with my knife, by
“ accident, to get off the weed, found them full
“ of spawn not thoroughly formed. I am not
“ positive, but think there were a few males
“ in *March*: I know there are thirty males* to
“ one female, twelve or fourteen of whom I have
“ often seen clinging round a female: I have

* Mr. *John Hunter* has assured me, that during his residence at *Belleisle*, he dissected some hundreds of toads, yet never met with a single female among them.

“ often disengaged her, and put her to a solitary male, to see with what eagerness he would seize her. They impregnate the spawn as it is drawn * out in long strings, like a necklace,

* I was incredulous as to the *obstetrical* offices of the male toad, but since the end is so well accounted for, and the fact established by such good authority, belief must take place.

Mr. *Demours*, in the *Memoirs of the French Academy*, as translated by Dr. *Templeman*, vol. I. 371. has been very particular in respect to the male toad, as acting the part of an *Accoucheur*; his account is curious, and claims a place here:

“ In the evening of one of the long days in summer, Mr. *Demours* being in the king's garden, perceived two toads coupled together at the edge of an hole, which was formed in part by a great stone at the top.

“ Curiosity drew him to see what was the occasion of the motions he observed, when two facts equally surprized him; the first was the extreme difficulty the female had in laying her eggs, insomuch that she did not seem capable of being delivered of them without some assistance. The second was, that the male was mounted on the back of the female, and exerted all his strength with his hinder feet in pulling out the eggs, whilst his fore-feet embraced her breast.

“ In order to apprehend the manner of his working in the delivery of the female, the reader must observe, that the paws of these animals, as well those of the fore-feet as of the hinder, are divided into several toes, which can perform the office of fingers.

“ It must be remarked likewise, that the eggs of this species of toads are included each in a membranous coat that is very firm, in which is contained the embryo; and that these eggs, which are oblong and about two lines in length, being fastened one to another by a short but very strong cord, form a kind of chaplet, the beads of which are distant from each other about the half of their length. It is by drawing this cord with

“ many yards long, not in a large quantity of
 “ jelly, like frogs’ spawn. *N. B.* After having
 “ held a female some time in my hand, I have,
 “ to try if there was any smell, put my finger
 “ a foot under water to a male, who has im-
 “ mediately seized it, and stuck to it as firmly
 “ as if it was a female. *Quere*, Would they
 “ seize a finger or rag that had touched a can-
 “ cerous ulcer?

“ Sixthly, Insects being their food, I never
 “ saw any toad shew any liking or dislike to
 “ any plant. *

“ his paw that the male performs the function of a midwife, and
 “ acquits himself in it with a dexterity that one would not ex-
 “ pect from so lumpish an animal.

“ The presence of the observer did not a little discompose the
 “ male; for some time he stopped short, and threw on the *curi-*
 “ *ous impertinent* a fixed look that marked his disquietness and
 “ fear; but he soon returned to his work with more precipita-
 “ tion than before, and a moment *after* he appeared undeter-
 “ mined whether he should continue it or not. The female
 “ likewise discovered her uneasiness at the sight of the stranger,
 “ by motions that interrupted sometimes the male in his opera-
 “ tion. At length, whether the silence and steady posture of
 “ the spectator had dissipated their fear, or that the *case* was
 “ urgent, the male resumed his work with the same vigour, and
 “ successfully performed his function.”

* This question arose from an assertion of *Linnæus*, that the
 toad delighted in filthy herbs. *Delectatur Cotula, Actæa, Sta-*
chyde fætida. The unhappy deformity of the animal seems to
 be the only ground of this as well as another misrepresentation,
 of its conveying a poison with its pimples, its touch, and even its
 breath. *Verrucæ lactescentes venenatæ infusæ tactu, anhelitu.*

“Seventhly, I hardly remember any persons
 “taking it up except my father and myself: I
 “do not know whether it had any particular
 “attachment to us.

“Eighthly, In respect to its end, I answer
 “this last quere. Had it not been for a tame
 “raven, I make no doubt but it would have
 “been now living; who one day seeing it at
 “the mouth of its hole, pulled it out, and al-
 “though I rescued it, pulled out one eye, and
 “hurt it so, that notwithstanding its living a
 “twelvemonth, it never enjoyed itself, and had
 “a difficulty of taking its food, missing the
 “mark for want of its eye: before that acci-
 “dent, had all the appearance of perfect
 “health.”

What Mr. *Pitfield* communicated to me serves farther to evince the patient and pacific disposition of this poor animal. If I am thought to dwell too long on the subject, let it be considered, that those who have most unprovoked enemies, and fewest friends, claim the greatest pity, and warmest vindication. This reptile has undergone all sorts of scandal; one author makes it the companion of an atheist; * and *Milton* † makes the devil itself its inmate;

* A great toad was said to have been found in the lodgings of *Vanini*, at *Toulouse*. Vide *Johnson's Shakespear*.

† *Paradise Lost*.

in a word, all kind of evil passions have been bestowed upon it: it is but justice, therefore, to say something in behalf of an animal that has of late had so many trials of its temper, from experiments occasioned by the new discovery of its cancer-sucking qualities. It has borne all the handling, teizing, bagging, &c. &c. without the least sign of a vindictive disposition; and has even made itself a sacrifice to the discharge of its office: this I know from the result of much inquiry. Would I could contradict what is asserted, of the inefficacy of the trials made of them in the most horrible of diseases! but at this time, I myself cannot bring one proof of the success. Still I would not have any one discouraged from the pursuit of the remedy. Heaven opens to us gradually its favors: the loadstone was for ages a mere matter of ignorant amaze at its attractive qualities: mercury was a supposed poison, and the terror of physicians: we now wonder at the powers of electricity, and are still but partially acquainted with its uses: the toad, the object of horror even in the most enlightened times, is found to be perfectly innocent; it has certainly contributed to the ease (and as has been said to the cure) of the unhappy cancered; let the following facts speak for themselves; they come

from persons of undoubted veracity, and will sufficiently establish the truth of the beneficent qualities of this animal.

The first paper relating to it is very ingeniously drawn up by Mr. *Pitfield*, for the information of Doctor *Littleton*, Bishop of *Carlisle* (now happy) who immediately honored me with the copy.

Exon, August 29, 1768.

“ Your lordship must have taken notice of a
“ paragraph in the papers, with regard to the
“ application of toads to a cancered breast. A
“ patient of mine has sent to the neighborhood
“ of *Hungerford*, and brought down the very
“ woman on whom the cure was done. I
“ have, with all the attention I am capable of,
“ attended the operation for eighteen or twenty
“ days, and am surprized at the phænomenon.
“ I am in no expectation of any great service
“ from the application: the age, constitution,
“ and thoroughly cancerous condition of the
“ person, being unconquerable barriers to it.
“ How an ail of that kind, absolutely local, in
“ an otherwise sound habit, and of a likely age,
“ might be relieved, I cannot say. But as to
“ the operation, thus much I can assert, that
“ there is neither pain nor nauseousness in it.

“ The animal is put into a linen bag, all but its
“ head, and that is held to the part. It has,
“ generally, instantly laid hold of the foulest
“ part of the sore, and sucked with greediness
“ until it dropped off dead. It has frequently
“ happened that the creature has swollen im-
“ mensely, and from its agonies appeared to
“ be in great pain. I have weighed them for
“ several days together, before and after the
“ application, and found their increase of
“ weight, in the different degrees, from a
“ drachm to near an ounce. They frequently
“ sweat exceedingly, and turn quite pale:
“ sometimes they disgorge, recover, and be-
“ come lively again. I think the whole scene
“ is surprising, and a very remarkable piece of
“ natural history. From the constant inof-
“ fensiveness which I have observed in them, I
“ almost question the truth of their poisonous
“ spitting. Many people here expect no great
“ good from the application of toads to can-
“ cers; and where the disorder is not abso-
“ lutely local, none is to be expected; where
“ it is, and seated in any part, not to be well
“ come at for extirpation, I think it is hardly
“ to be imagined, but that the having it sucked
“ clean as often as you please, must give great
“ relief. Every body knows, that dogs licking

APPENDIX. I.

“ of sores cures them, which is, I suppose,
 “ chiefly by keeping them clean. If there is
 “ any credit to be given to history, poisons
 “ have been sucked out,

— *Pallentia Vulnera lambit*
Ore Venena trahens.

“ are the words of *Lucan* on the occasion: if
 “ the people to whom these words are applied,
 “ did their cure by immediately following the
 “ injection of the poison, the local confinement
 “ of another poison brings the case to a great
 “ degree of similarity.

“ I hope I have not tired your lordship with
 “ my long tale; as it is a true one, and in my
 “ apprehension a curious piece of natural his-
 “ tory, I could not forbear communicating it
 “ to you. I own I thought the story in the
 “ papers to be an invention, and when I consi-
 “ dered the instinctive principle in all animals
 “ of self-preservation, I was confirmed in my
 “ disbelief; but what I have related I saw,
 “ and all theory must yield to fact. It is only
 “ the *Rubeta*, the land toad, which has the
 “ property of sucking; I cannot find any the
 “ least mention of the property in any one of the
 “ old naturalists. My patient can bear to have
 “ but one applied in twenty-four hours: the

“ woman who was cured had them on day and
“ night, without intermission, for five weeks.
“ Their time of hanging at the breast has been
“ from one to six hours.”

The other is of a woman who made the experiment, which I give, as delivered to me from undoubted authority.

About six years* ago a poor woman received a crush on her breast by the fall of a pail; a complaint in that part was the result.

Last year her disorder increased to an alarming degree; she had five wounds on her breasts, one exceedingly large, from which fragments of bone worked out, giving her vast pain; and at the same time there was a great discharge of thin yellow matter: she was likewise reduced to a mere skeleton.

All her left side and stomach was much swelled; her fingers doughy and discolored.

On the 25th of *September*, 1768, the first toad was applied; between that and the 29th she used seven, and had that night better rest. She swallowed with greater ease, for before that time there was some appearance of tumor in her neck, and a difficulty of getting any thing down.

* i. e. from 1769.

October 16th, the patient better. It was thought proper as winter was coming on, and of course it would be very difficult to procure a number of toads, to apply more at a time, so three were put on at once. The swelling in the arm abated, and the woman's rest was good.

During these trials she took an infusion of Water Parsnep with *Pulvis Cornacchini*.

December 18th, continued to look ill, but finds herself better: two of the wounds were now healed.

She was always most easy when the toads were sucking, of which she killed vast numbers in the operation.

January 1769. The last account that was received, informing that the patient was better.

The remarks made on the animals are these:

Some toads died very soon after they had sucked; others lived about a quarter of an hour, but some lived much longer: for example, one that was applied about seven o'clock sucked till ten, and died as soon as it was taken from the breast; another that immediately succeeded continued till three o'clock, but dropped dead from the wound, each swelled exceedingly, and turned of a pale color.

These toads did not seem to suck greedily, and would often turn their heads away; but

during the time of sucking were heard to smack their lips like a young child.

As those reptiles are apt by their struggles to get out of the bag, the open end ought to be made with an open hem, that the string may run the more readily, and fasten tightly about the neck.

It would be improper to quit the subject without mentioning the origin of this strange discovery, which was owing to a woman near *Hungerford*, who labored under a cancerous complaint in her breast, which had long baffled all applications. The account she gives of the manner in which she came by her knowledge is singular, and I may say apocryphal. She says of herself, that in the height of her disorder she went to some church where there was a vast crowd: on going into a pew, she was accosted by a strange clergyman, who, after expressing compassion for her situation, told her that if she would make such an application of living toads* as above mentioned, she would be well.

* I have been told that she not only made use of living toads, but permitted the dead ones to remain at her breast, by way of cataplasms, for some weeks. I have been informed that the relation of this strange method of cure was brought over a few years ago by one of our foreign ministers; and that there is also notice taken of it in *Wheeler's Travels*.

This dark story is all we can collect relating to the affair. It is our opinion that she stumbled upon the discovery by accident, and that having set up for a cancer doctress, she thought it necessary to amuse the world with this mysterious relation.* For it seems very unaccountable, that this unknown gentleman should express so much tenderness for this single sufferer, and not feel any for the many thousands that daily languish under this terrible disorder: would he not have made use of this invaluable nostrum for his own emolument, or at least, by some other means, have found a method of making it public for the good of mankind?

Here I take leave of the subject, which I could not do without expressing my doubts, as to the method of the woman's obtaining her information; but in respect to the authenticity of this new-discovered property of the toad, facts establish it beyond dispute. Let the humane wish for speedy proofs of the efficacy; and for the satisfaction of the world, let those who are

* Mr. *Valentine Greatraks*, who, about the year 1664, persuaded himself that he could cure diseases, by stroking them out of the parts affected with his hand; and the famous *Bridget Bostock*, of *Cheshire*, who worked cures by virtue of her fasting spittle, both came by their art in a manner supernatural, but by *faith many were made whole*.

capable of giving indisputable proofs of the success, take the earliest opportunity of making the public acquainted with so interesting an affair.

I have now given, without alteration, the whole of the facts as stated in my former edition. They are too curious to be lost; as they may serve to give to after-times a proof of the belief of the age, and the fair tryal made of a most distasteful remedy in the most dreadful of complaints.

No. II.

OF THE PROLIFICNESS OF FISH. P. 6.

Fish.	Weight.		Weight of Spawn.	Fecundity.	Time.
	oz.	dr.	grains.		
Carp	25.	5.	2571.	203109.	April 4.
Cod-fish			12540.	3686760.	Dec. 23.
Flounder	24.	4.	2200.	1357400.	March 14.
Herring	5.	10.	480.	36960.	Oct. 25.
Mackarel	18.	0.	1223 $\frac{1}{2}$.	546681.	June 18.
Perch	8.	9.	765 $\frac{1}{2}$.	28323.	April 5.
Pike	56.	4.	5100 $\frac{1}{2}$.	49304.	April 25.
Roach	10.	6 $\frac{1}{2}$.	361.	81586.	May 2.
Smelt	2.	0.	149 $\frac{1}{2}$.	38278.	March 21.
Sole	14.	8.	542 $\frac{1}{2}$.	100362.	June 13.
Tench	40.	0.		383252.*	May 28.

* Some part of the spawn of this fish was by accident lost, so that the account here is below the reality. *Vide Phil. Trans.* 1767.

No. III.

OF THE METHOD OF MAKING ISINGLASS IN
ICELAND, FROM THE SOUNDS OF COD AND
LING. P. 237.

THE sounds of cod and ling bear general likeness to those of the *Sturgeon* kind of *Linnaeus* and *Artedi*, and are in general so well known, as to require no particular description. The *Newfoundland* and *Iceland* fishermen split open the fish as soon as taken, and throw the backbones, with the sounds annexed, in a heap; but previous to putrefaction, the sounds are cut out, washed from their slimes, and salted for use. In cutting out the sounds, the parts between the ribs are left behind, which are much the best; the *Iceland* fishermen are so sensible of this, that they beat the bones upon a block with a thick stick, till the *Pockets*, as they term them, come out easily, and thus preserve the sound entire. If the sounds have been cured with salt, that must be dissolved by steeping them in water, before they are prepared for *Isinglass*. The fresh sound must then be laid upon a block of wood, whose surface is a little elliptical, to the end of which a small hair

brush is nailed, and with a saw-knife, the membranes on each side of the sound must be scraped off. The knife is rubbed upon the brush occasionally, to clear its teeth, the pockets are cut open with scissars, and perfectly cleansed of the mucous matter with a coarse cloth: the sounds are afterwards washed a few minutes in lime-water, in order to absorb their oily principle; and lastly, in clear water. They are then laid upon nets, to dry in the air; but, if intended to resemble foreign *Isinglass*, the sounds of cod will only admit of that called book, but those of ling both shapes. The thicker the sounds are, the better the *Isinglass*, color excepted; but that is immaterial to the brewer, who is its chief consumer.

No. V.

OBSERVATIONS ON THE GENUS PLEURONECTES,
BY EDWARD HANMER, ESQ. P. 326.

GENUS. PLEURONECTES. FLOUNDER.

BODY compressed and expanded.

EYES, both on the upper side of the head.

SYNOPSIS of *English* species.

* With the eyes towards the right.

	Page	Proportional Breadth.*		
Plaice	304	-	48	Head tuberculated.
Dab	308	-	46	Scales rough.
Smear dab	309	-	46	Scales smooth.
Common	305	-	42	Spines on the margin of the body.
Holibut	302	-	39	Without spines, tail lunated.
Sole	311	-	37	Side line near the head much bent.
Red back	313	-	36	Side line straight.

* PROPORTIONAL BREADTH is the proportion the breadth bears to the length; the latter always supposed to consist of one hundred parts. LENGTH means the distance, as traced by a string, on the lower side the fish from the point of the head to the setting on of the tail. BREADTH is the greatest distance between the dorsal and anal fins, ascertained in the same manner, and on the same side of the fish.

** With the eyes towards the left.

	Page	Proportional Breadth.	
Turbot	315	- - 70	Upper side spiny.
Top knot	322	- - 57	Scales rough.
Brill	321	- - 56	Scales smooth.
Whiff	324	- - 40	Lower jaw projecting.
Scald fish	325	- - 39	Jaws even, tail rounded.

A residence upon the coasts of *Cornwall* and *Devonshire*, during the winter of the years 1806 and 7, afforded opportunities for procuring drawings, and making descriptions, of the above-mentioned species of flat-fish, the *Pleuronectes* of *Linnaeus*.

Whether we consider singularity of structure on the one hand, or the large and valuable supply our tables derive from it on the other, the genus we are treating of seems well entitled to attention; and yet our knowledge, even of the *British* part of it, has not been so perfect and free from difficulty as might be expected.

Of the twelve species here enumerated, seven of them, viz.

The Plaise,

Dab,

Flounder,

Holibut,

Sole, *solus*

Turbot, and Brill,

Are said to be found in *Ray's Synopsis Piscium*, and two more, viz.

The Smear Dab,* and Whiffe,

Are figured in the Appendix to that work from the drawings of Mr. Jago.† These are both of them described by Mr. Pennant, in the *British Zoology* (in 1776), the former from a specimen met with in *London*, and the latter from one taken in the estuary of the *Dee* near *Downing*: as an unknown visitor upon that coast, it was thought worthy of the plate given of it in the *Welsh* tour.‡

No less than four of our species are not to

* The different vernacular names, by which the same fish is known in different districts, sometimes in near vicinity to each other, may lead to error, unless the enquirer be aware of this circumstance; the Smear dab of *London* is the Lemon sole at *Bath*, the Merry sole at *Plymouth*, the Kit at *Looe*, and the Queen at *Penzance*. The Brill (formerly the Pearl) of *London* and the eastern coast, is the Kite of *Cornwall* and *Devonshire*; at *Torbay* the two names meet, and there it is well known by either. The Lantern of *Mount's boy* is a Whiffe or *French* sole at the eastern parts of *Cornwall* and of *Plymouth*.

† In the plate there is the common error of engraved plates of this genus; if the eyes, &c. are placed on their natural side upon the engraved copper, they are of course represented in a reversed position upon the impression of it.

‡ Vol. i. page 29, *tab*.

be found among those enumerated by Dr. *Gmelin* in the last edition of the *Syst. Nat.*; and the two last mentioned species are not referable with certainty to any description known to me.

The *Pleuronectes punctatus* (*Targeur* of *Bloch*) is now for the first time introduced as a *British* species; the specimen from which the drawing was taken, was caught near *Plymouth*, where, and on the coast of *Cornwall* also, they sometimes, though rarely, make their appearance. The error committed by *Bloch*, and not detected by Dr. *Gmelin*, in considering this species as synonymous with the Whiffe of *Jago* and *Pennant*, is now rendered still more evident.

The genus *Pleuronectes* ranks with those which present the most natural assemblage of species, its boundaries are as distinctly marked as those of any natural order. Its singular structure accords with its habits and economy, as contrivance does with use in the other parts of the works of nature; the flat form, the situation of the eyes, and the absence of the air bladder, sufficiently point out the part of the ocean it is destined to inhabit: all the species reside at the sandy bottoms either of the sea or of the estuaries of the larger rivers, embedded



CORNISH TRAWL NET, & TRAWL BOAT.

in their sandy pastures; they find food in the various species of worms and shell fish, with which the sands abound; and there also, by their superior activity, they are able to evade the pursuit of many voracious enemies.

Most of the species take the bait freely; the hook* is therefore a common mode of capture, especially for the larger Turbots, Brills, and Plaise; but generally for every species of flat fish the great supply is derived from the Trawl net. The annexed engraving will give to those, who are unacquainted with it, some idea of this very productive engine.

A. the beam is of elm, 25 feet long and four inches square; to this the upper part of the net is attached, the lower part to the ground line

B. The beam is supported by two brackets or sledges two and half feet high. The distance from the beam to the end of the cod is about seventy-five feet. The bottom part of the net is made with what is called mackarel twine, the

* The line in use upon the *Cornish* coast is called a bolter, it is from sixty to eighty fathoms long, the hooks are fixed on short lateral lines, which are attached to the main line at the intervals of a fathom between each; the line in use upon the *Dutch* coast, called the long line, extends to the great length of seven or eight miles, and is furnished, as the bolter is, with lateral lines and hooks. The usual baits for flat fish are pieces of herrings, pilchards, smelts (fresh and salt), sand worms, mussels, &c.

upper part of a finer sort. The common trawl-boat of *Cornwall* and the western part of *Devonshire*, is a lug-sail two-masted vessel of about twenty-five feet keel, and sixteen tons measurement, such as the engraving represents. The boats of *Brixham*, which take a much wider range, and work in deeper water, are cutter rigged; the former with weaker powers, seldom work in water deeper than about twenty-five fathom. A rope of about one hundred and forty fathoms in length, which divides near the net, and attaches to each sledge, connects the net with the boat, and thus equipped the wind performs the labor. The most favorable time for work is night, winter the best season, making progress of about a mile or a mile and half per hour. Besides all the different species of flat fish, the other sorts most commonly taken on the *Cornish* coast are rays, hakes, ling, cod, and gurnards.

No. V.

ADDITIONS AND CORRECTIONS.

GREAT HEADED CACHALOT. P. 80.

WE omitted to remark in its proper place, that Mr. *Pennant*, in the edition of the *British Zoology*, published in 1769, described the Great Headed Cachalot as distinct from the Round Headed, and applied to it the synonyms since given to the latter.

His description was taken from that by Sir *Robert Sibbald*. A figure of the tooth is given in *Pl. ix. fig. 3*.

GENUS *XXVIII. REMORA. (P. 287.)

HEAD furnished above with a flat, ovate, transversely sulcated shield.

BODY without scales.

RAYS branchiostegous, six.

- | | | |
|------------------------|--|--|
| 1, MEDITER-
RANEAN. | Echineis, <i>Plinii lib.</i> ix. c. 15.
<i>Belon</i> , 440. | Le Remore. <i>Bloch Ichth.</i> v.
109. <i>tab.</i> 172. |
| | Remora. <i>Rondel.</i> 436. | Echineis Remora. <i>Gm. Lin.</i> |
| | Remora Imperati <i>Zuyger. Wil.</i> | 1187. |
| | <i>Ichth.</i> 119. | <i>Art. gen.</i> 15. <i>Syn.</i> 28. |
| | <i>Raii Syn. Pisc.</i> 71. | <i>De la Cepede Hist. des Poissons</i> , iii. 147. |

DESCRIP-
TION.

[THE Remora or Sucking fish grows to the length of about eighteen inches. The mouth large, furnished with numerous small teeth; the lower jaw longer than the upper; the eyes small, the irides yellow; the color of the body an uniform brown; the skin smooth, but marked with numerous pores. On the head is a singular oval shield, by which the fish adheres with great tenacity to any flat surface, and sometimes in considerable numbers to the sides of ships, which gave rise to the fabulous

report that the motion of vessels was impeded by them.

The only instance known of this singular species having been drawn to our coasts was in the summer of 1806, when one was taken by Dr. *Turton* in *Swansea* from the back of a cod-fish. ED.

VARIABLE COD-FISH. P. 239.

Doctor *Turton*, in the *British Fauna*, p. 89, gives this, without hesitation, as a fish of *Great Britain*; he also adds another species of *Gadus* which is frequently taken at *Swansea*, and which he describes under the name of

SPECKLED COD.

He says it is of a pale brown color with golden spots of white beneath, and thickly covered with minute dusky specks; the upper jaw longer; length eighteen inches; back arched; belly slightly prominent; head large, gradually sloping; iris reddish, pupil black; chin with a single beard; lateral line nearer the back, curved as far as the middle of the second

dorsal fin, growing broader and whiter towards the end; lower jaw with five punctures on each side.

This description corresponds so much with the Torsk, *Ascan. icon. tab. iv. p. 4.* the *Gadus callarias* of other ichthyologists, that we can entertain little doubt of its identity. Should this be the case, we must require the reader to consider the fish described at p. 239, as the *Titling* of *Ascanius, tab. v. p. 5.*

No. VI.

CATALOGUE OF THE ANIMALS DESCRIBED
IN THIS VOLUME, WITH THEIR BRITISH
NAMES.*

R E P T I L E S.

- | | | |
|-----------------|---------|-------------------------------------|
| 1. Coriaceous | TOR- | |
| | TOISE, | Melwioges. |
| 2. Common | FROG, | Llyffant melyn. |
| 3. Edible, | | Llyffant melyn cefn
grwm. |
| 4. Great, | | Llyffant mawr. |
| 5. Toad, | | Llyffant du, Llyffant
dafadenog. |
| 6. Natter Jack. | | Llyffant gwyllt. |
| 7. Scaly | LIZARD, | Genau goeg gennog. |
| 8. Anguine, | | nadredig. |
| 9. Little, | | leiaf. |
| 10. Brown, | | frech. |
| 11. Warty, | | ddafade-
nog. |
| 12. Lesser | Water | |
| | Newt. | |

* It is to *Richard Morris*, Esq. that the public is indebted for the *British* names.

APPENDIX. VI.

- | | |
|---|------------------------------------|
| 13. Viper SERPENT, | Neidr, Neidr ddu,
Gwiber. |
| 14. Ringed, | Neidr fraith, Neidr y
tomenydd. |
| 15. Fragile,
Blind or Slow-
worm, | Pwl dall. Neidr y de-
faid. |
| 16. <i>Aberdeen</i> , | Neidr <i>Aberdeen</i> . |

F I S H E S.

- | | |
|----------------------------------|---------------------|
| 1. Common WHALE, | Morfil Cyffredin. |
| 2. Fin, | Morfil Barfog. |
| 3. Round-lipped, | Morfil Twynggrwn. |
| 4. Pike-headed, | Morfil Penhwyad. |
| 5. Sharp-nosed, | |
| 6. Unicorn NAR-
WHAL. | |
| 7. Blunt-headed CA-
CHALOT. | |
| 8. Round-headed, | Morfil Pengrwn. |
| 9. High-finned, | Morfil Uchel adain. |
| 10. Two-toothed. | |
| 11. Bottle-head HY-
PEROODON, | Morfil durynawg. |
| 12. Common DOL-
PHIN, | Dolffyn. |
| 13. Porpesse, | Llamhidydd. |

14. Grampus,	Morfochyn.
15. Gladiator.	
16. Sea LAMPREY,	Llysowen bendoll, Llamprai.
17. Lesser,	Lleprog.
18. Pride,	Llamprair llaid.
19. Glutinous HAG.	
20. Skate, RAY,	Cath fôr, morcâth, Rhaien.
21. Sharp-nosed,	Morcath drwynfain.
22. Rough,	Morcath arw.
23. Fuller,	Ceffyl Gwyn.
24. Shagreen,	Morcath ffreinig.
25. Electric,	Swrthbysg.
26. Whip,	Morcath gynffon gwia- len.
27. Thornback,	Morcath bigog.
28. Cuvier.	
29. Sting,	Morcath lefn.
30. Angel SHARK,	Maelgi.
31. Picked,	Ci Pigog, Piccwd.
32. Basking,	Heulgi.
33. White,	Morgi gwyn.
34. Blue,	Morgi glas, y Sierc.
35. Long-tailed,	Llwynog môr.
36. Tope,	Ci glas.
37. Spotted,	Ci ysgarmes.
38. Lesser spotted,	Morgi lleiaf.

39. Smooth,	Ci Llyfn.
40. Porbeagle,	Corgi môr.
41. <i>Beaumaris</i> ,	Morgi mawr.
42. Northern CHIMÆ- RA.	
43. Common ANGLER,	Morlyffant.
44. Long,	Morlyffant hir.
45. Common STUR- GEON,	Ystwrsion.
46. Oblong TETRO- DON,	Heulbysg.
47. Short,	byrr.
48. Globe,	crothog.
49. Lump SUCKER,	Jar-fôr.
50. Unctuous,	Môr falwen.
51. <i>Jura</i> ,	leiaf.
52. Bimaculated.	
53. <i>Montagu</i> .	
54. Longer PIPE FISH,	Pibellbysg hir.
55. Shorter,	byrr.
56. Little,	Mor Neidr.
57. <i>Æquoreal</i> .	
58. Snipe - nosed TRUMPET FISH.	
59. Common EEL,	Lysowen.
60. Conger,	Mor Llysowen, Cyn- gyren.

- | | |
|--------------------------------------|--------------------------------|
| 61. Common WOLF
FISH, | Morflaidd. |
| 62. Sand LAUNCE, | Llamrhiaid, Pysgod
bychain. |
| 63. Beardless OPHI-
DIUM. | |
| 64. Four - toothed
SCABBARD FISH. | |
| 65. Anglesey MORRIS, | Morys. |
| 66. Sicilian SWORD
FISH, | Cleddyfbysg. |
| 67. Gemmeous DRA-
GONET, | Morddraig emmog. |
| 68. Sordid, | salw. |
| 69. Common WEEV-
ER, | Mor wiber, Pigyn as-
trus. |
| 70. Great, | fawr. |
| 71. Common COD
FISH, | Codsyn. |
| 72. Variable. | |
| 73. Hadock, | Hadoc. |
| 74. Whiting Pout, | Cod lwyd. |
| 75. Bib, | Deillion. |
| 76. Power, | Cwdyn ebrill. |
| 77. Coal, | Chwitlyn glas. |
| 78. Green. | |
| 79. Pollack, | Morlas. |
| 80. Whiting, | Chwitlyn gwyn. |

81. Hake,	Cegddu.
82. Forked Hake.	Cegddu fforchogfarf.
83. Lest Hake,	lleiaf.
84. Ling,	Honos.
85. Burbot,	Llofen, Llofencn.
86. Three bearded,	Codsyn farf teirfforch.
87. Five bearded,	pumfforch.
88. Torsk.	
89. Trifurcated TAD- POLE FISH.	
90. Crested BLENNY.	Llysnafeddbysg cribog.
91. Gattorugine.	
92. Smooth.	Cleirach gwymmon.
93. Spotted.	Gwrachen fair.
94. Viviparous.	
95. Red BAND FISH.	
96. Black GOBY.	Craigbysg du.
97. Spotted.	brych.
98. River BULL HEAD,	Pentarw, Bawd y me- llynydd.
99. Armed,	Penbwl.
100. Father Lasher.	Sarph y môr.
101. Common DOREE,	Sion dori.
102. Opah.	Brenhinbysg.
103. Holibut, FLOUN- DER,	Lleden ffreinig.
104. Plaise,	Lleden frech.
105. Common,	Lleden ddu.

- | | |
|----------------------|-------------------------------------|
| 106. Dab, | Lledenn gennog, Lledenn dwfr croyw. |
| 107. Smear Dab. | Lledenn iraidd. |
| 108. Sole, | Tafod yr hydd, Tafod yr ych. |
| 109. Red back. | |
| 110. Turbot, | Lledenn chwith, Torbwt. |
| 111. Pearl, | Perl. |
| 112. Topknot. | |
| 113. Whiff. | Lledenn arw fafnrwth. |
| 114. Scald-fish. | |
| 115. Lunulated GILT | |
| HEAD, | Peneuryn, Eurben. |
| 116. Red, | Brêm y môr. |
| 117. <i>Rayan</i> . | |
| 118. Toothed. | Eurben danheddog. |
| 119. Antient WRASSE, | Gwrach. |
| 120. Ballan. | |
| 121. Bimaculated. | |
| 122. Trimaculated. | Gwrach rengog. |
| 123. Striped. | gefngwrwm. |
| 124. Gibbous. | |
| 125. Goldsinny. | |
| 126. Cook. | Côgwrach. |
| 127. Rainbow. | |
| 128. Comber. | |
| 129. Common PERCH. | Perc. |
| 130. Basse, | Draenog, Gannog. |

131. Sea Perch,	Perc y môr.
132. Ruffe.	Y Garwbere.
133. Black.	du.
134. Three spined STICKLEBACK,	Sil y dom, Pysgod y gath.
135. Ten spined,	Pigowgbysg.
136. Fifteen spined,	Silod y môr.
137. Common MACK- REL,	Macrell.
138. Tunny,	Macrell Yspaen.
139. Scad.	y meirch.
140. Red SURMUL- LET,	Hyrddyn coch.
141. Striped.	Macrell rhengog.
142. Grey GURNARD,	Penhaiarn llwyd, Pen- haiernyn.
143. Red,	Penhaiarn coch.
144. Piper,	Pibydd.
145. Sapphirine,	Ysgyfarnog y môr.
146. Streaked.	Penhaiarn rhestrog.
147. Bearded LOCHE,	Crothell yr afon.
148. Spinous.	
149. Common SAL- MON,	Gleisiedyn, Eog, Ma- ran.
150. Grey,	Penllwyd, Adfwlch.
151. White.	
152. Sea Trout.	Brithyll y môr.
153. River Trout,	Brithyll.

154. Samlet,	Brith y gro.
155. Charr,	Torgoch.
156. Grayling,	Brithyll rhestrog, Glas- gangen.
157. Smelt,	Brwyniaid.
158. Gwyniad,	Gwiniedyn.
159. Common PIKE,	Penhwyad.
160. Gar,	Môr nodwydd, Corn big.
161. Saury.	
162. Sheppy ARGENTINE.	Arianbysg.
163. European ATHERINE.	
164. Grey MULLET,	Hyrd dyn, Mingrwn.
165. Winged FLYING FISH.	Ehedbysg.
166. Common HER- RING,	Pennog, ysgaden.
167. Pilchard,	Pennog mair.
168. Sprat,	Coeg Bennog.
169. Anchovy.	
170. Shad,	Herlyn, Herling.
171. White bait.	
172. Carp CYPRINE,	Carp, Cerpyn.
173. Barbel,	Barfbysg, y Barfog.
174. Tench,	Gwrachen, Ysgretten.

175. Gudgeon,	Crothell.
176. Bream,	Brêm.
177. Rud,	Rhuddgoch.
178. Gibeles,	
179. Roach,	Rhyfell.
180. Dace,	Darsen, Goleubysg.
181. Graining.	
182. Chub,	Penci, Cochgangen.
183. Bleak,	Gorwynbysg.
184. Minow,	Crothell y dom, By- chan bysg.
185. Gold Fish.	Eurbysg.

APPENDIX.

186. Mediterranean REMORA.

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END OF THE THIRD VOLUME.

TABLE OF ERRATA.—VOL. III.

Page 5. l. 20, for “venemous,” read “venomous.”

31. To first note add ED.

64. l. 2, for “their,” r. “its.”

67. l. 8, for “thoses hores,” r. “those shores.”

71. First note *dele*, “It has, &c.”

80. l. 8, for “iii.” r. “ix.”

81. Note, for “ii.” r. “viii.”

82, 83, 91. Note, for “iii.” r. “ix.”

128. Note, bottom line, for “on,” r. “in.”

154. l. 7, *dele* “,”

223. l. 10, for “sappharine,” r. “sapphirine.”

272. Note, l. 4, for “*Lophicus*,” r. “*Lophius*.”

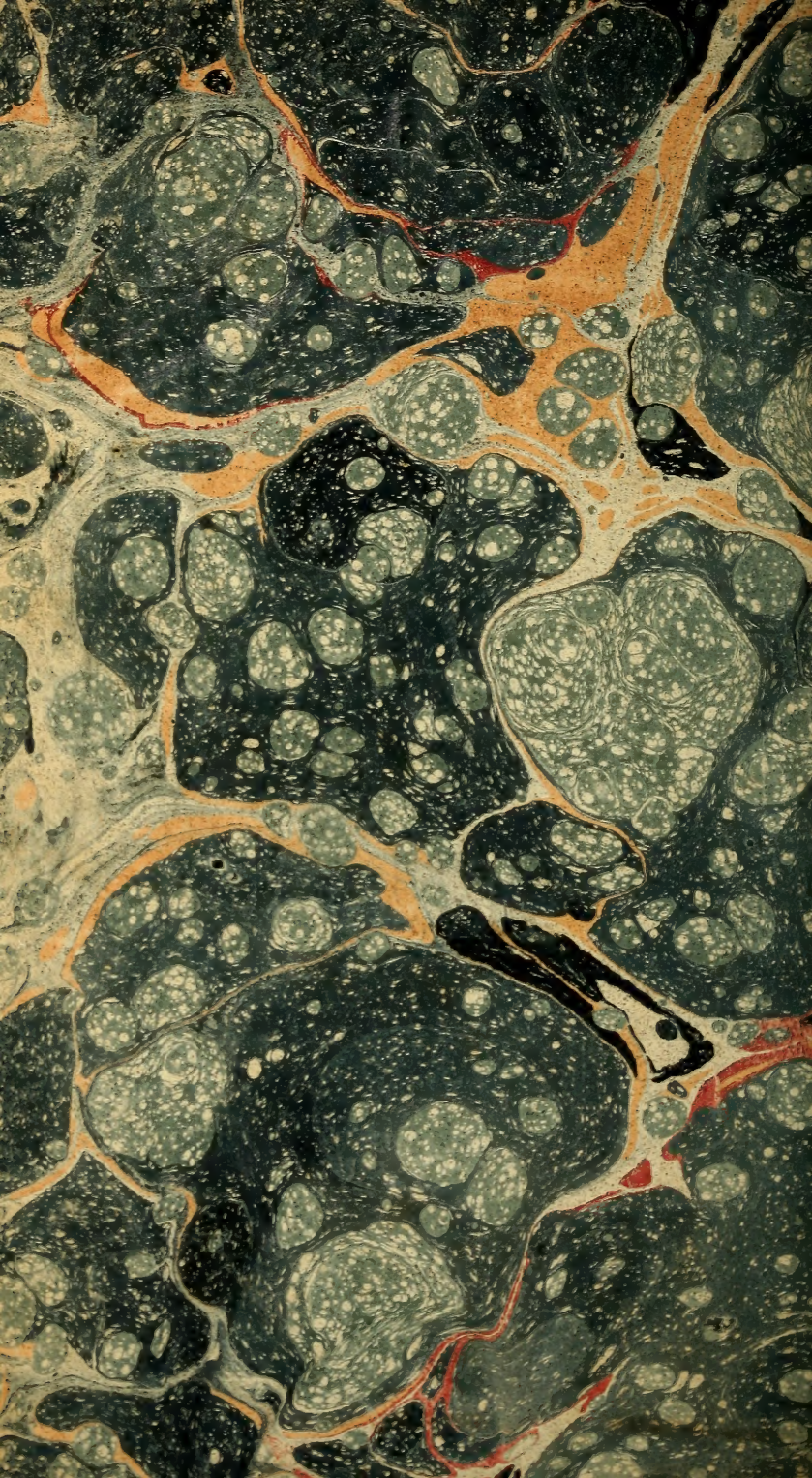
431. Note, l. 4, for “embedded,” r. “imbedded.”

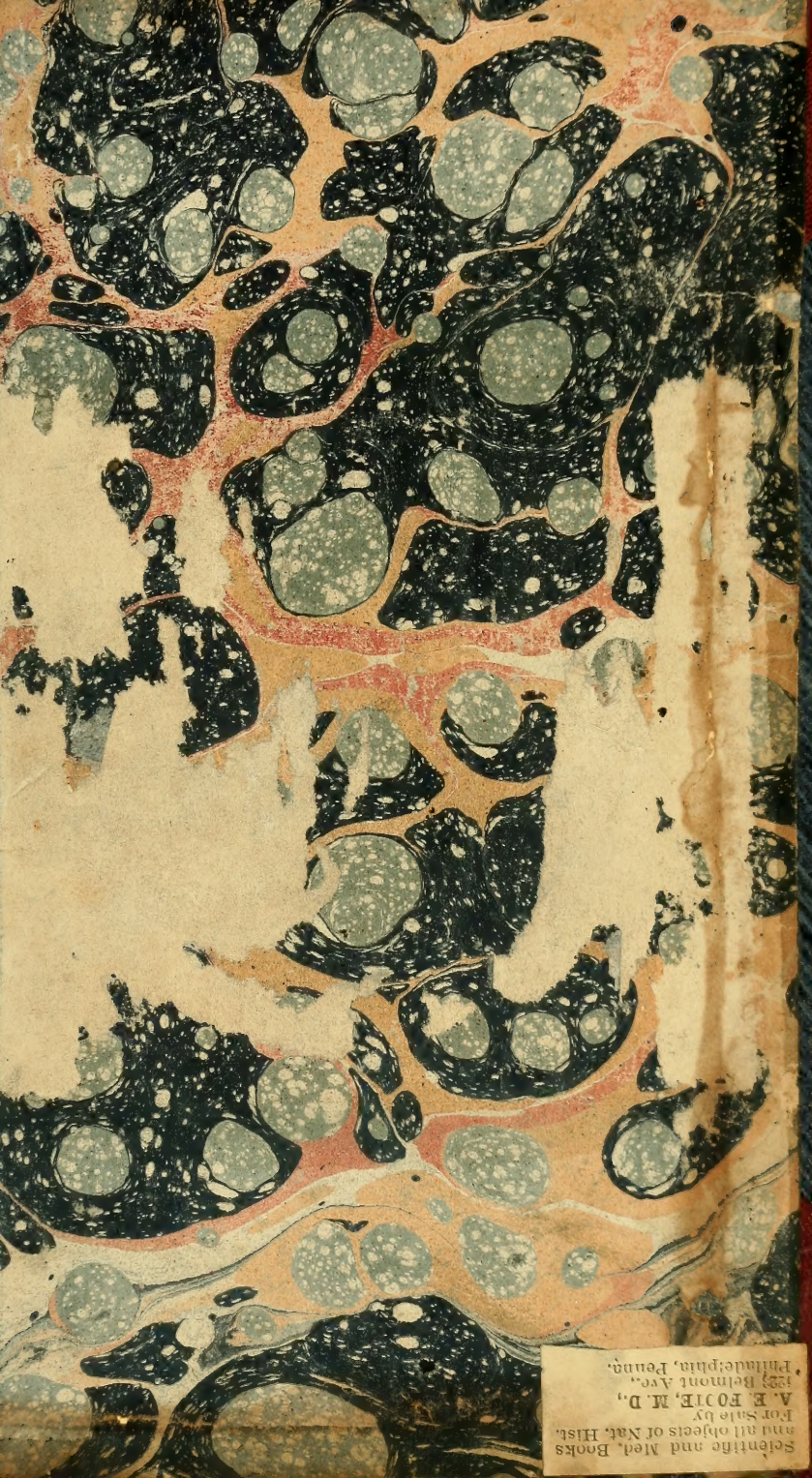
461. l. 19, for “*Rosetto*,” r. “*Rosetta*.”

514. Appendix II. refer to (“page 471.”)

517. Appendix, for “No. V.” r. “No. IV.”

[The editor takes some blame to himself for permitting two erroneous passages at p. 132 and 136 to remain. It is well ascertained that the appendages near the root of the tail in the Ray and Shark tribe, are not organs of generation, but serve as arms or folders. ED.]





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